Technical Report CERC-96-6
September 1996

US Army Corps of Engineers
Waterways Experiment Station

Annual Data Summary for 1994 CERC Field Research Facility

Volume II: Appendixes C Through E

by *Michael W. Leffler, Clifford F. Baron, Brian L. Scarborough, Kent K. Hathaway, Paul R. Hodges, C. Ray Townsend*

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U.S. Army Corps of Engineers
Waterways Experiment Station
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

MBL/WHOI
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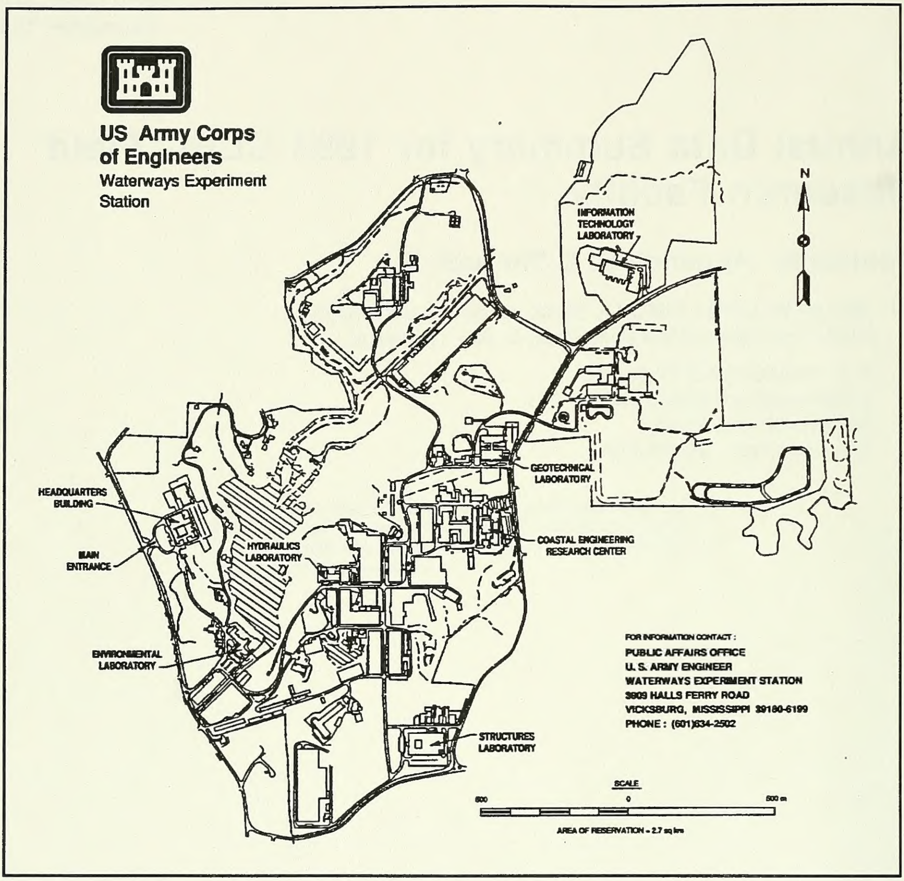

US Army Corps of Engineers
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FOR INFORMATION CONTACT :
PUBLIC AFFAIRS OFFICE
U. S. ARMY ENGINEER
WATERWAYS EXPERIMENT STATION
3909 HALLS FERRY ROAD
VICKSBURG, MISSISSIPPI 39180-6199
PHONE : (601)634-2502

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Appendix C
Wave Data for Gauge 111

Wave data summaries for Gauge 111[1] for 1994 and for 1985 through 1994 are presented in the following pages:

Daily H_{mo} and T_p

Figure C1 displays the individual wave height H_{mo} and peak spectral wave period T_p values, along with the monthly mean values.

Joint Distributions of H_{mo} and T_p

Annual and monthly joint distribution tables are presented in Tables C1 and C2, and data for 1985 through 1994 are in Tables C3 and C4. Each table gives the frequency (in parts per 10,000) for which the wave height and peak period were within the specified intervals; these values can be converted to percentages by dividing by 100. Marginal totals are also included. The row total gives the number of observations out of 10,000 that fell within each specified peak period interval. The column total gives the number of observations out of 10,000 that fell within each specified wave height interval.

Cumulative Distributions of Wave Height

Annual and monthly wave height distributions for 1994 are plotted in cumulative form in Figures C2 and C3. Data for 1985 through 1994 are plotted in Figure C4.

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[1] Substituted for Gauge 111 was data from Gauge 640 for 1985 and 1986. Also used was data from Gauge 141 from 1987 and Gauge 511 from Jan-Aug 1993.

Peak Spectral Wave Period Distributions

Annual and monthly peak wave period T_p distribution histograms for 1994 are presented in Figures C5 and C6. Data for 1985 through 1994 are presented in Figure C7.

Persistence of Wave Heights

Table C5 shows the number of times in 1994 when the specified wave height was equaled or exceeded at least once during each day for the duration (consecutive days). Data for 1985 through 1994 are averaged and given in Table C6. An example is shown below:

Height	Consecutive Day(s) or Longer																		
m	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19+
0.5	18	15		14	13	12		11	10	9				8		7			
1.0	50	34	24	21	18	14	12	8	7	3			2						
1.5	41	19	8	6	2	1													
2.0	22	9	5	1															
2.5	10	5	2																
3.0	6	1																	
3.5		1																	
4.0	1																		

This example indicates that wave heights equaled or exceeded 1.0 m 50 times for at least 1 day; 34 times for at least 2 days; 24 times for at least 3 days, etc. Therefore, on 16 occasions the height equaled or exceeded 1.0 m for 1 day exactly (50 - 34 = 16); on 10 occasions for 2 days; on 3 occasions for 3 days, etc. Note that the height exceeded 1 m 50 times for 1 day or longer, while heights exceeded 0.5 m only 18 times for this same duration. This change in durations occurred because the longer durations of lower waves may be interspersed with shorter, but more frequent, intervals of higher waves. For example, one of the times that the wave heights exceeded 0.5 m for 16 days may have represented three times the height exceeded 1 m for shorter durations.

Spectra

Monthly spectra for the pressure gauge (Gauge 111) are presented in Figure C8. The plots show "relative" energy density as a function of wave frequency. These figures summarize the large number of spectra for each month. The figures emphasize the higher energy density associated with storms, as well as the general shifts in energy density to different frequencies.

As used here, "relative" indicates the spectra have been smoothed by the three-dimensional surface drawing routine. Consequently, extremely high- and low-energy density values are modified to produce a smooth surface. The figures are not intended for quantitative measurements; however, they do provide the energy density as a function of frequency relative to the other spectra for the month.

Monthly and annual wave statistics for Gauge 111 for 1994 and for 1985 through 1994 are presented in Table C7.

Figure C9 plots monthly time histories of wave height and period.

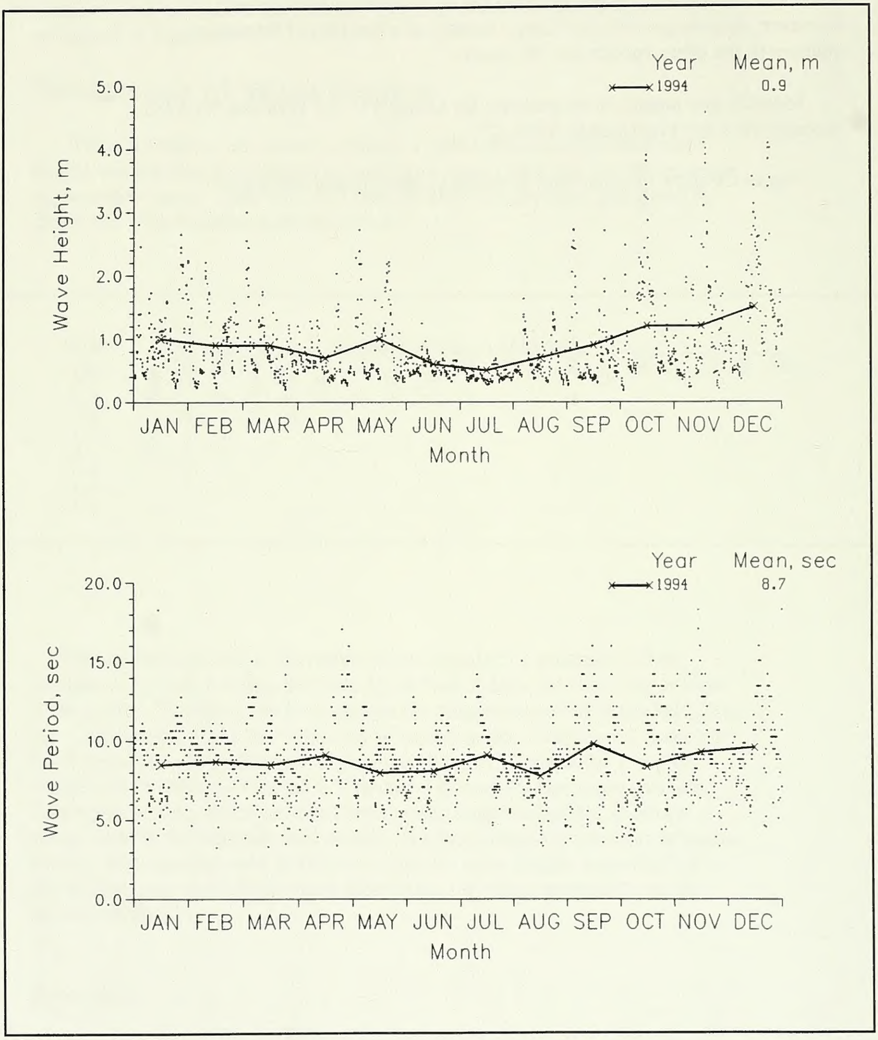


Figure C1. 1994 daily wave height and period values with monthly means for Gauge 111

Table C1
Annual Joint Distribution of H_{mo} versus T_p

Annual 1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	.	55	69	83	173	366	898	587	539	235	290	21	3316
0.50 - 0.99	.	90	290	290	504	546	801	559	532	76	173	14	3875
1.00 - 1.49	.	.	90	269	249	117	186	159	200	28	62	7	1367
1.50 - 1.99	.	.	.	97	262	62	76	69	110	21	48	.	745
2.00 - 2.49	.	.	.	14	83	69	41	55	35	28	41	.	366
2.50 - 2.99	.	.	.	.	7	14	21	28	48	.	48	.	166
3.00 - 3.49	.	.	.	.	.	.	7	14	55	.	.	.	76
3.50 - 3.99	.	.	.	.	.	.	7	.	21	14	7	.	49
4.00 - 4.49	.	.	.	.	.	.	.	.	.	21	14	.	35
4.50 - 4.99	.	.	.	.	.	.	.	.	.	7	.	.	7
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	145	449	753	1278	1174	2037	1471	1540	430	683	42	

Table C2
Monthly Joint Distribution of H_{mo} versus T_p

January 1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	.	.	.	.	.	.	163	732	1382	.	81	.	2358
0.50 - 0.99	.	81	244	325	569	407	407	813	732	.	.	81	3659
1.00 - 1.49	.	.	81	488	732	81	244	163	407	.	.	.	2196
1.50 - 1.99	.	.	.	163	488	81	81	.	81	.	.	.	894
2.00 - 2.49	.	.	.	.	.	81	325	163	81	.	81	.	731
2.50 - 2.99	.	.	.	.	.	81	.	.	81	.	.	.	162
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	81	325	976	1789	731	1220	1871	2764	0	162	81	

February 1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	.	89	89	.	179	179	357	1339	536	.	.	.	2768
0.50 - 0.99	.	.	.	89	268	179	714	714	1429	.	.	.	3393
1.00 - 1.49	.	.	89	179	446	179	357	625	982	.	.	.	2857
1.50 - 1.99	.	.	.	89	446	89	.	89	.	.	.	.	713
2.00 - 2.49	.	.	.	89	89	89	.	.	.	.	.	.	267
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	89	178	446	1428	715	1428	2767	2947	0	0	0	

March 1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	.	81	.	.	407	569	407	407	81	163	81	.	2196
0.50 - 0.99	.	163	244	407	650	569	732	569	894	81	732	.	5041
1.00 - 1.49	.	.	163	244	650	325	163	81	163	.	81	.	1870
1.50 - 1.99	.	.	.	81	244	.	.	.	.	.	163	.	488
2.00 - 2.49	.	.	.	.	.	81	.	.	.	.	163	.	244
2.50 - 2.99	.	.	.	.	.	.	81	.	.	.	.	.	81
3.00 - 3.49	.	.	.	.	.	.	.	.	81	.	.	.	81
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	244	407	732	1951	1544	1383	1057	1219	244	1220	0	

(Continued)

(Sheet 1 of 4)

Table C2 (Continued)

April 1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	.	.	.	84	84	252	1008	84	588	756	924	84	3864
0.50 - 0.99	.	168	336	588	420	588	1008	1429	336	168	84	.	5125
1.00 - 1.49	.	.	84	504	84	168	.	.	.	.	.	.	840
1.50 - 1.99	.	.	.	.	84	.	.	.	.	.	.	.	84
2.00 - 2.49	.	.	.	84	.	.	.	.	.	.	.	.	84
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	168	420	1260	672	1008	2016	1513	924	924	1008	84	

May 1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	.	.	.	161	403	565	1532	565	161	.	161	.	3548
0.50 - 0.99	.	.	242	242	565	645	403	323	484	.	.	.	2904
1.00 - 1.49	.	.	323	565	81	.	161	484	.	.	81	.	1695
1.50 - 1.99	.	.	.	161	242	.	81	323	161	.	.	.	968
2.00 - 2.49	.	.	.	.	323	81	.	323	.	.	.	.	727
2.50 - 2.99	.	.	.	.	.	.	81	.	.	.	.	.	81
3.00 - 3.49	.	.	.	.	.	.	81	.	.	.	.	.	81
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	0	565	1129	1614	1291	2339	2018	806	0	242	0	

June 1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	.	83	83	.	250	750	1667	333	917	.	250	.	4333
0.50 - 0.99	.	167	417	667	1083	917	1500	250	500	.	83	.	5584
1.00 - 1.49	.	.	.	83	.	.	.	.	.	.	.	.	83
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	250	500	750	1333	1667	3167	583	1417	0	333	0	

(Continued)

(Sheet 2 of 4)

Table C2 (Continued)

July 1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	Total
0.00 - 0.49	.	.	172	345	172	1121	2500	1379	1638	431	259	.	8017
0.50 - 0.99	.	.	.	.	517	345	603	172	.	86	259	.	1982
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	0	172	345	689	1466	3103	1551	1638	517	518	0	

August 1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	Total
0.00 - 0.49	.	81	325	325	407	813	1463	488	.	81	81	.	4064
0.50 - 0.99	.	163	325	163	732	569	1870	407	.	163	.	.	4392
1.00 - 1.49	.	.	81	.	244	163	488	244	163	.	81	.	1464
1.50 - 1.99	.	.	.	.	81	.	.	.	.	.	.	.	81
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	244	731	488	1464	1545	3821	1139	163	244	162	0	

September 1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	Total
0.00 - 0.49	.	.	.	.	.	.	750	333	583	1083	1167	.	3916
0.50 - 0.99	.	250	500	500	167	500	333	417	833	83	333	.	3916
1.00 - 1.49	.	.	83	417	.	.	250	.	83	.	167	.	1000
1.50 - 1.99	.	.	.	83	83	.	.	83	167	.	83	.	499
2.00 - 2.49	.	.	.	.	83	167	.	83	.	.	.	.	333
2.50 - 2.99	.	.	.	.	.	83	83	167	.	.	.	.	333
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	250	583	1000	333	750	1416	1083	1666	1166	1750	0	

(Continued)

(Sheet 3 of 4)

Table C2 (Concluded)

October 1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	.	161	161	81	161	.	81	403	81	81	323	.	1533
0.50 - 0.99	.	81	887	323	403	645	323	323	645	161	161	.	3952
1.00 - 1.49	.	.	81	161	484	.	.	.	.	242	161	.	1129
1.50 - 1.99	.	.	.	323	565	.	323	.	565	161	81	.	2018
2.00 - 2.49	.	.	.	.	242	242	.	81	161	.	.	.	726
2.50 - 2.99	.	.	.	.	.	.	.	.	161	.	.	.	161
3.00 - 3.49	.	.	.	.	.	.	.	161	161	.	.	.	322
3.50 - 3.99	.	.	.	.	.	.	.	.	161	.	.	.	161
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	242	1129	888	1855	887	727	968	1935	645	726	0	

November 1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	.	167	.	.	.	83	583	917	500	250	167	167	2834
0.50 - 0.99	.	.	167	83	500	667	917	250	167	167	333	83	3334
1.00 - 1.49	.	.	.	333	.	167	417	167	83	.	.	.	1167
1.50 - 1.99	.	.	.	83	417	417	250	250	83	.	.	.	1500
2.00 - 2.49	.	.	.	.	.	83	83	.	83	.	.	.	249
2.50 - 2.99	.	.	.	.	83	.	.	.	.	.	250	.	333
3.00 - 3.49	.	.	.	.	.	.	.	.	167	.	.	.	167
3.50 - 3.99	.	.	.	.	.	.	.	.	.	167	.	.	167
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	167	.	167
4.50 - 4.99	.	.	.	.	.	.	.	.	.	83	.	.	83
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	167	167	499	1000	1417	2250	1584	1083	667	917	250	

December 1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	.	.	.	.	.	81	323	161	81	.	.	.	646
0.50 - 0.99	.	.	81	81	161	484	806	1048	403	.	81	.	3145
1.00 - 1.49	.	.	81	242	242	323	161	161	565	81	161	81	2098
1.50 - 1.99	.	.	.	161	484	161	161	81	242	81	242	.	1613
2.00 - 2.49	.	.	.	.	242	.	81	.	81	323	242	.	969
2.50 - 2.99	.	.	.	.	.	.	.	161	323	.	323	.	807
3.00 - 3.49	.	.	.	.	.	.	.	.	242	.	.	.	242
3.50 - 3.99	.	.	.	.	.	.	81	.	81	.	81	.	243
4.00 - 4.49	.	.	.	.	.	.	.	.	.	242	.	.	242
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	0	162	484	1129	1049	1613	1612	2018	727	1130	81	

(Sheet 4 of 4)

Table C3
Annual Joint Distribution of H_{mo} versus T_p (All Years)

Annual 1985-1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	6	73	42	72	128	238	689	523	422	154	255	12	2614
0.50 - 0.99	2	130	258	405	480	415	915	769	636	125	278	16	4429
1.00 - 1.49	.	11	117	333	275	145	239	200	263	33	91	1	1708
1.50 - 1.99	.	.	6	102	181	77	77	69	123	25	55	1	716
2.00 - 2.49	.	.	.	6	54	45	36	33	51	19	34	1	279
2.50 - 2.99	.	.	.	.	8	14	12	18	34	11	25	.	122
3.00 - 3.49	.	.	.	.	2	5	8	14	21	8	6	.	64
3.50 - 3.99	.	.	.	.	.	1	6	6	16	6	7	1	43
4.00 - 4.49	.	.	.	.	.	.	1	2	8	3	5	3	22
4.50 - 4.99	.	.	.	.	.	.	.	.	1	1	.	.	2
5.00 - Greater	.	.	.	.	.	.	.	1	.	.	.	.	1
Total	8	214	423	918	1128	940	1983	1635	1575	385	756	35	

Table C4
Monthly Joint Distribution of H_{mo} versus T_p (All Years)

January 1985-1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	.	100	8	58	33	207	357	697	481	116	191	17	2265
0.50 - 0.99	.	133	191	456	489	340	688	771	746	58	207	8	4087
1.00 - 1.49	.	8	158	547	473	124	199	224	299	17	41	.	2090
1.50 - 1.99	.	.	8	141	274	83	91	66	133	41	17	.	854
2.00 - 2.49	.	.	.	.	66	91	91	33	66	8	41	.	396
2.50 - 2.99	.	.	.	.	8	8	41	25	91	.	25	.	198
3.00 - 3.49	.	.	.	.	.	.	17	8	33	8	8	.	74
3.50 - 3.99	.	.	.	.	.	.	.	.	17	.	8	.	25
4.00 - 4.49	.	.	.	.	.	.	.	.	.	8	.	.	8
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	241	365	1202	1343	853	1484	1824	1866	256	538	25	

February 1985-1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	.	46	36	46	100	82	346	520	365	27	146	.	1714
0.50 - 0.99	.	82	264	365	520	383	775	784	912	64	182	9	4340
1.00 - 1.49	.	9	109	447	401	228	328	319	392	46	146	.	2425
1.50 - 1.99	.	.	9	137	292	100	91	73	137	9	18	.	866
2.00 - 2.49	.	.	.	18	91	91	9	18	36	.	46	.	309
2.50 - 2.99	.	.	.	.	9	18	.	27	55	27	36	.	172
3.00 - 3.49	.	.	.	.	9	.	18	46	18	9	18	.	118
3.50 - 3.99	.	.	.	.	.	.	.	18	27	9	.	.	54
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	137	418	1013	1422	902	1567	1805	1942	191	592	9	

March 1985-1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	8	25	16	49	99	132	337	230	329	99	140	.	1464
0.50 - 0.99	.	99	140	403	485	502	822	781	880	107	354	.	4573
1.00 - 1.49	.	8	197	354	419	181	222	263	452	8	156	.	2260
1.50 - 1.99	.	.	8	99	173	99	74	74	206	16	132	.	881
2.00 - 2.49	.	.	.	8	66	16	58	107	74	.	99	.	428
2.50 - 2.99	.	.	.	.	8	16	16	33	49	33	33	.	188
3.00 - 3.49	.	.	.	.	.	8	.	16	41	8	.	.	73
3.50 - 3.99	.	.	.	.	.	.	8	.	58	8	8	.	82
4.00 - 4.49	.	.	.	.	.	.	.	.	25	.	16	.	41
4.50 - 4.99	.	.	.	.	.	.	.	.	8	.	.	.	8
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	8	132	361	913	1250	954	1537	1504	2122	279	938	0	

(Continued)

(Sheet 1 of 4)

Table C4 (Continued)

April 1985-1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	9	34	9	60	68	119	443	332	332	238	357	9	2010
0.50 - 0.99	.	153	187	400	460	443	1021	1047	791	221	468	9	5200
1.00 - 1.49	.	26	60	213	204	119	264	298	179	34	102	.	1499
1.50 - 1.99	.	.	17	94	111	60	85	77	204	17	60	.	725
2.00 - 2.49	.	.	.	17	51	.	17	51	111	.	34	.	281
2.50 - 2.99	.	.	.	.	9	.	17	17	43	60	.	.	146
3.00 - 3.49	.	.	.	.	9	9	9	9	26	9	9	.	80
3.50 - 3.99	.	.	.	.	.	.	9	.	9	9	9	.	36
4.00 - 4.49	.	.	.	.	.	.	9	9	9	.	.	.	27
4.50 - 4.99	.	.	.	.	.	.	.	.	9	.	.	.	9
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	9	213	273	784	912	750	1874	1840	1713	588	1039	18	

May 1985-1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	8	85	42	135	237	237	737	457	542	262	432	.	3174
0.50 - 0.99	.	135	305	271	440	483	1109	771	550	85	186	17	4352
1.00 - 1.49	.	25	85	186	119	135	347	229	212	8	76	.	1422
1.50 - 1.99	.	.	8	68	85	17	59	119	161	25	42	8	592
2.00 - 2.49	.	.	.	.	76	25	51	51	25	34	17	.	279
2.50 - 2.99	.	.	.	.	34	8	17	8	17	8	25	.	117
3.00 - 3.49	.	.	.	.	.	.	8	8	17	8	17	.	58
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	8	245	440	660	991	905	2328	1643	1524	430	795	25	

June 1985-1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	17	138	43	52	258	456	1523	843	508	138	172	9	4157
0.50 - 0.99	9	112	232	404	551	439	1317	955	353	138	198	17	4725
1.00 - 1.49	.	9	52	181	155	103	95	52	120	.	43	.	810
1.50 - 1.99	.	.	17	17	43	43	26	17	34	.	34	.	231
2.00 - 2.49	.	.	.	.	9	9	34	.	9	.	17	.	78
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	26	259	344	654	1016	1050	2995	1867	1024	276	464	26	

(Continued)

(Sheet 2 of 4)

Table C4 (Continued)

July 1985-1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	9	145	153	136	247	715	1923	1243	732	255	434	17	6009
0.50 - 0.99	.	170	306	426	357	460	945	426	213	94	153	17	3567
1.00 - 1.49	.	.	26	77	43	43	68	9	43	.	17	.	326
1.50 - 1.99	.	.	.	9	9	9	17	34	26	.	.	.	104
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	9	315	485	648	656	1227	2953	1712	1014	349	604	34	

August 1985-1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	17	69	61	104	225	389	1038	666	528	164	173	9	3443
0.50 - 0.99	.	173	242	536	631	484	1107	692	528	156	311	61	4921
1.00 - 1.49	.	.	138	216	164	130	294	112	104	17	52	.	1227
1.50 - 1.99	.	.	.	69	61	26	.	17	61	43	17	.	294
2.00 - 2.49	.	.	.	.	9	9	.	17	35	9	9	.	88
2.50 - 2.99	.	.	.	.	.	.	9	.	.	.	.	.	9
3.00 - 3.49	.	.	.	.	9	.	.	.	.	.	.	.	9
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	9	.	9
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	17	242	441	925	1099	1038	2448	1504	1256	389	571	70	

September 1985-1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	.	44	9	26	35	132	492	307	439	176	316	.	1976
0.50 - 0.99	.	149	272	395	457	413	1027	957	825	158	299	.	4952
1.00 - 1.49	.	9	97	378	167	184	360	246	263	61	97	.	1862
1.50 - 1.99	.	.	.	105	158	132	149	53	61	26	61	9	754
2.00 - 2.49	.	.	.	.	53	88	18	26	.	53	44	18	300
2.50 - 2.99	.	.	.	.	.	61	18	18	9	.	9	.	115
3.00 - 3.49	.	.	.	.	.	.	9	.	.	.	.	.	9
3.50 - 3.99	.	.	.	.	.	.	.	9	26	.	.	.	35
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	202	378	904	870	1010	2073	1616	1623	474	826	27	

(Continued)

(Sheet 3 of 4)

Table C4 (Concluded)

October 1985-1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	.	17	50	25	50	92	242	217	225	83	183	17	1201
0.50 - 0.99	.	108	350	283	458	358	858	792	750	183	400	8	4548
1.00 - 1.49	.	8	225	450	292	100	217	242	450	67	142	.	2193
1.50 - 1.99	.	.	8	192	292	50	175	92	225	58	75	.	1167
2.00 - 2.49	.	.	.	8	67	92	42	42	125	17	25	.	418
2.50 - 2.99	.	.	.	.	8	17	17	25	58	.	33	.	158
3.00 - 3.49	.	.	.	.	.	17	33	33	42	8	17	.	150
3.50 - 3.99	.	.	.	.	.	.	33	8	42	17	8	8	116
4.00 - 4.49	.	.	.	.	.	.	.	.	8	.	.	33	41
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	8	.	.	.	.	8
Total	0	133	633	958	1167	726	1617	1459	1925	433	883	66	

November 1985-1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	.	68	26	94	68	171	504	393	282	145	196	68	2015
0.50 - 0.99	9	128	325	436	512	393	786	598	427	162	265	9	4050
1.00 - 1.49	.	9	145	470	427	213	342	171	342	68	102	.	2289
1.50 - 1.99	.	.	.	154	299	154	85	137	120	9	26	.	984
2.00 - 2.49	.	.	.	17	43	94	94	26	68	.	17	.	359
2.50 - 2.99	.	.	.	.	9	26	9	26	26	.	34	.	130
3.00 - 3.49	.	.	.	.	.	9	.	34	43	9	.	.	95
3.50 - 3.99	.	.	.	.	.	.	.	17	.	17	.	.	34
4.00 - 4.49	.	.	.	.	.	.	.	9	17	.	17	.	43
4.50 - 4.99	.	.	.	.	.	.	.	.	.	9	.	.	9
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	9	205	496	1171	1358	1060	1820	1411	1325	419	657	77	

December 1985-1994, Gauge 111
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	.	114	53	79	123	123	335	379	308	141	326	.	1981
0.50 - 0.99	9	114	282	493	396	273	519	660	660	70	308	35	3819
1.00 - 1.49	.	18	106	475	431	185	141	238	290	70	114	9	2077
1.50 - 1.99	.	.	.	141	387	158	70	70	97	53	176	.	1152
2.00 - 2.49	.	.	.	.	123	26	9	18	62	106	53	.	397
2.50 - 2.99	.	.	.	.	9	18	.	35	62	9	106	.	239
3.00 - 3.49	.	.	.	.	.	18	.	9	35	35	.	.	97
3.50 - 3.99	.	.	.	.	.	9	26	18	18	18	53	9	151
4.00 - 4.49	.	.	.	.	.	.	.	9	35	26	18	.	88
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	9	246	441	1188	1469	810	1100	1436	1567	528	1154	53	

(Sheet 4 of 4)

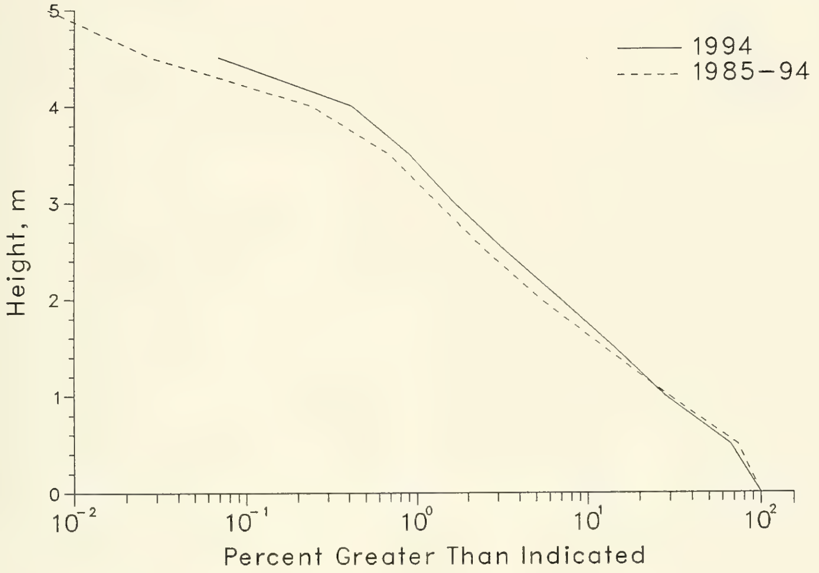


Figure C2. Annual cumulative wave height distributions for Gauge 111

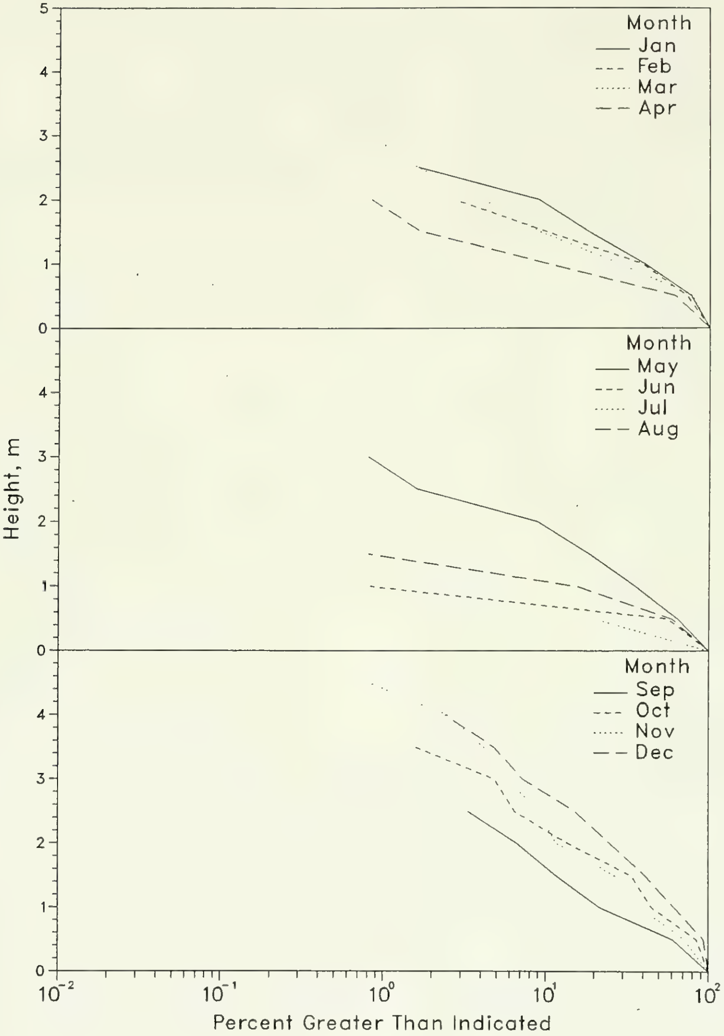


Figure C3. 1994 monthly wave height distributions for Gauge 111

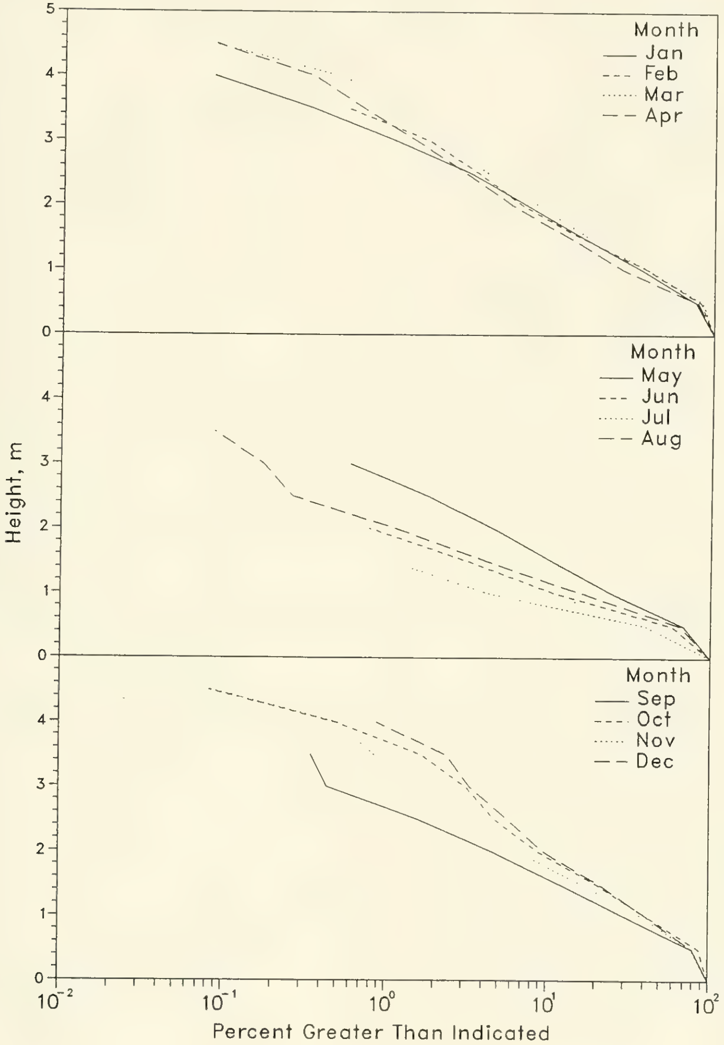


Figure C4. 1985-1994 monthly wave height distributions for Gauge 111

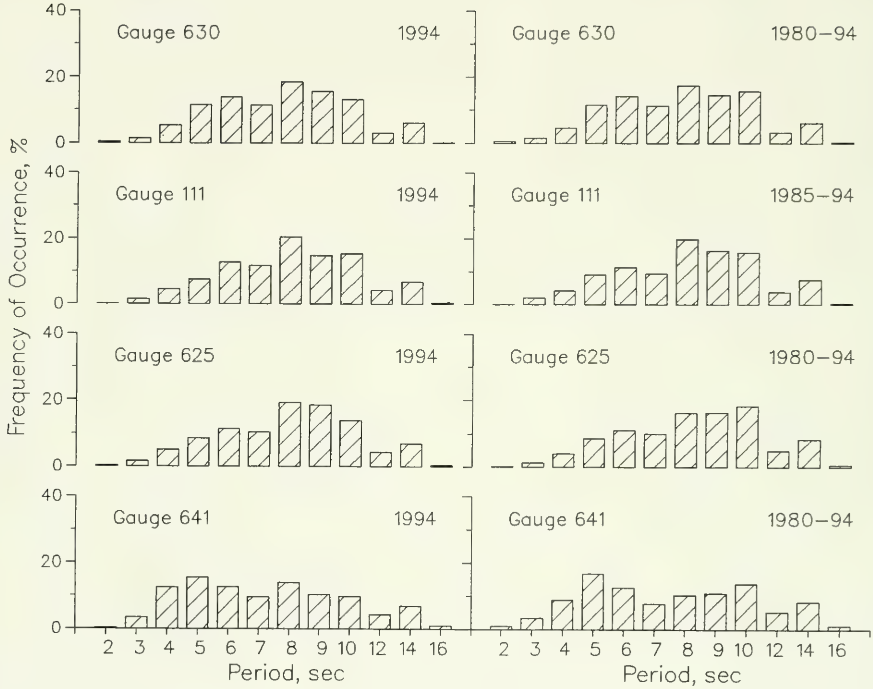


Figure C5. Annual wave period distributions for all gauges

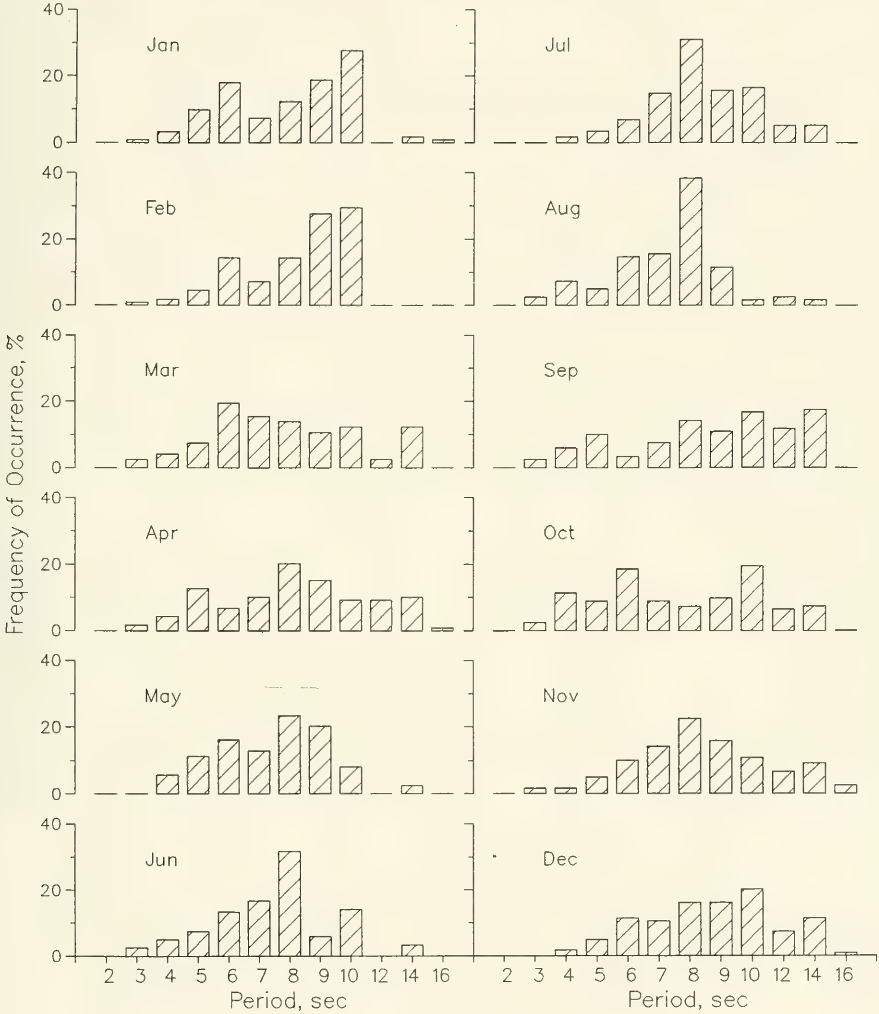


Figure C6. 1994 monthly wave period distributions for Gauge 111

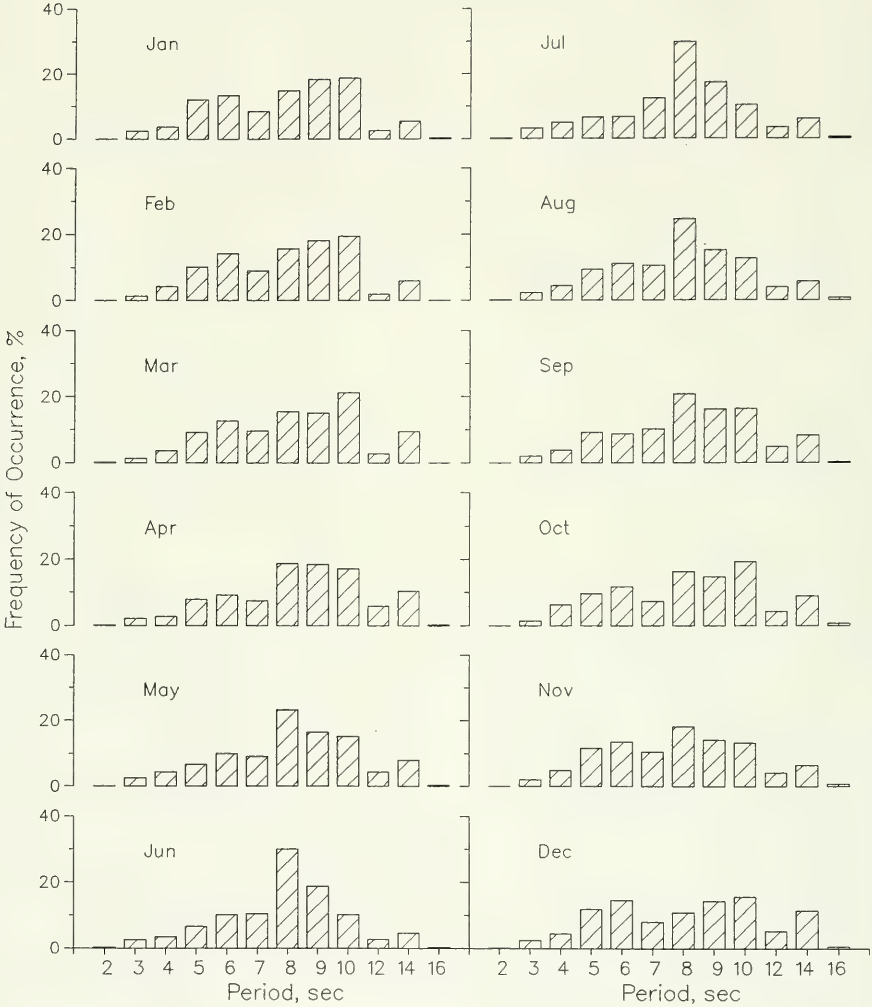


Figure C7. 1985-1994 monthly wave period distributions for Gauge 111

Table C5
1994 persistence of H_{mo} for Gauge 111

Height	Consecutive Day(s) or Longer																		
(m)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19+
0.5	35	32	26	24		19	15	14	11	10			9		6				47
1.0	41	31	19	12	10		6	5	4	3	1								
1.5	31	17	9	6		4			2	1									
2.0	19	11	5	3	2														
2.5	11		4		1														
3.0	6	4	1																
3.5	4	2																	
4.0		2																	

Table C6
1985 through 1994 persistence of H_{mo} for Gauge 111

Height	Consecutive Day(s) or Longer																		
(m)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19+
0.5	30	27	23	22	19	17	15	14	13	12	10	9	8		7		6		5
1.0	48	34	22	15		10	7	4	3	2		1							
1.5	33	19	9	5		2		1											
2.0	17	9	4			1													
2.5	9	4	3		1														
3.0	5	3	1																
3.5	3	2	1																
4.0	2	1																	

* Data from Gauge 640 from 1985 and 1986 as well as data from Gauge 141 for 1987 were used for comparison with Gauge 111. Gauge 511 used for Jan-Aug 1993.

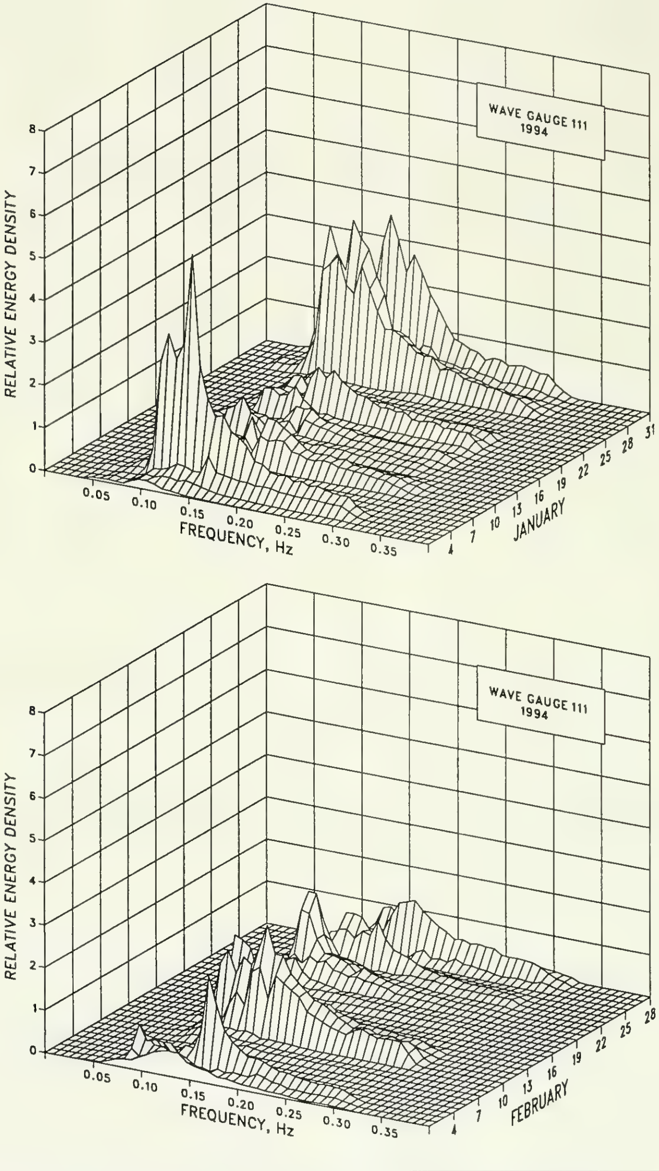


Figure C8. 1994 monthly spectra for Gauge 111 (Sheet 1 of 6)

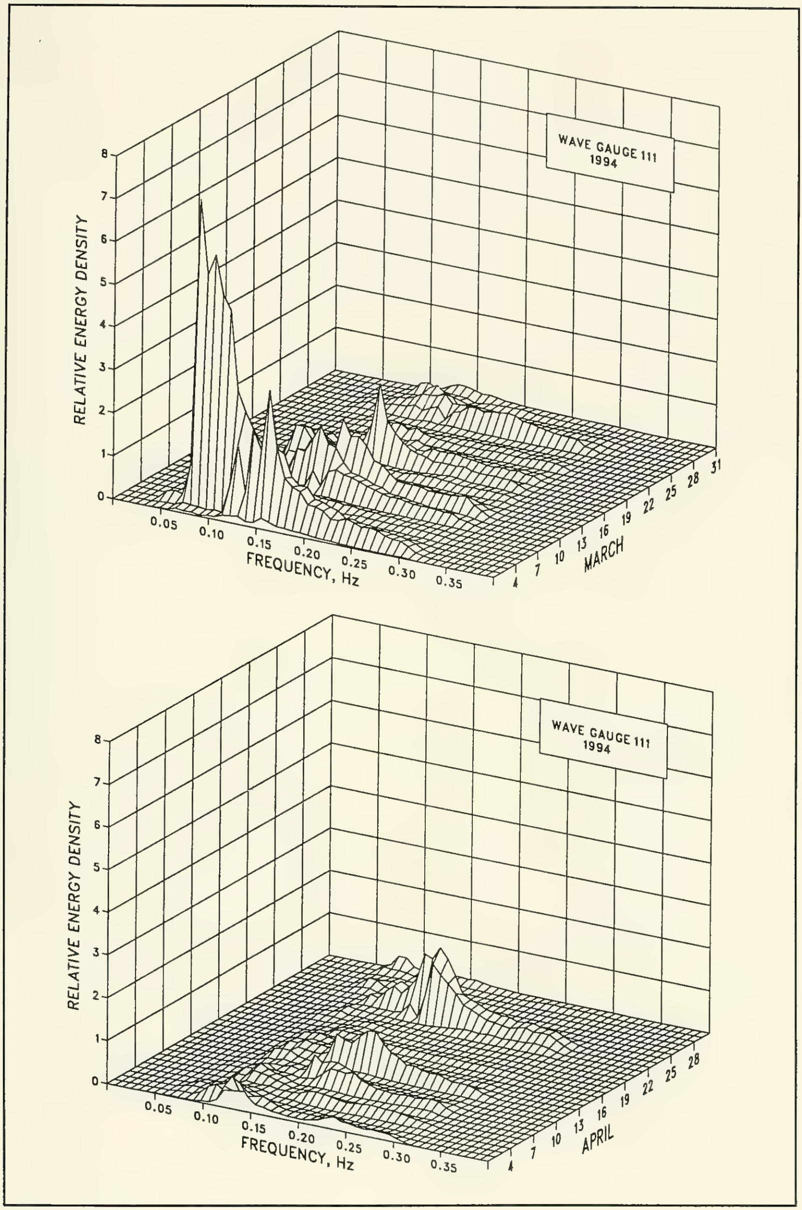


Figure C8. (Sheet 2 of 6)

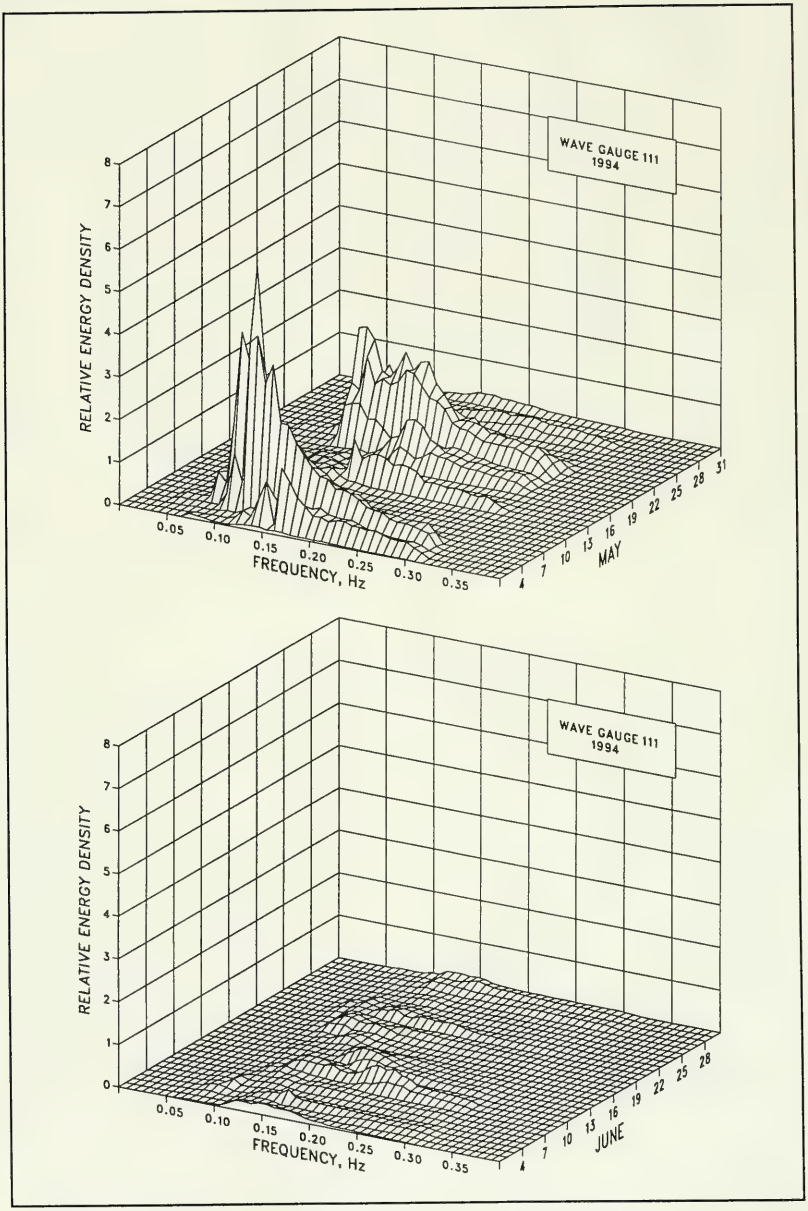
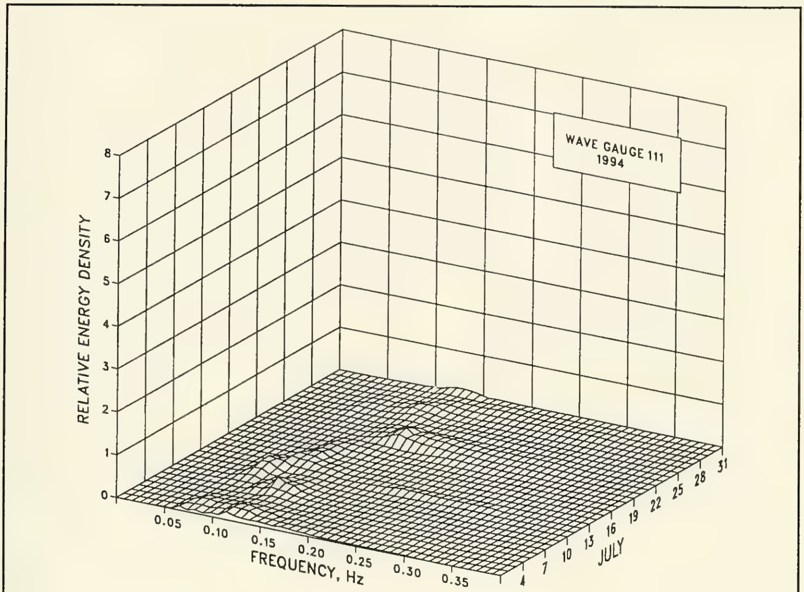


Figure C8. (Sheet 3 of 6)



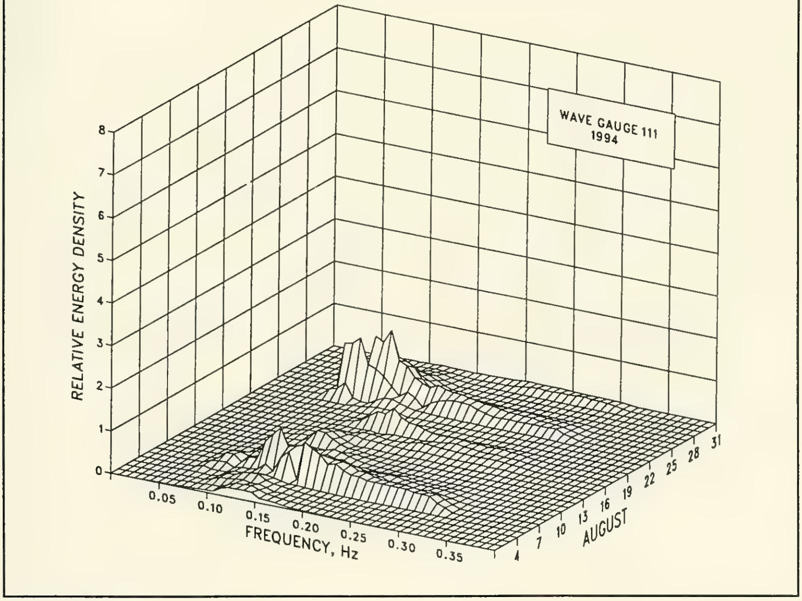


Figure C8. (Sheet 4 of 6)

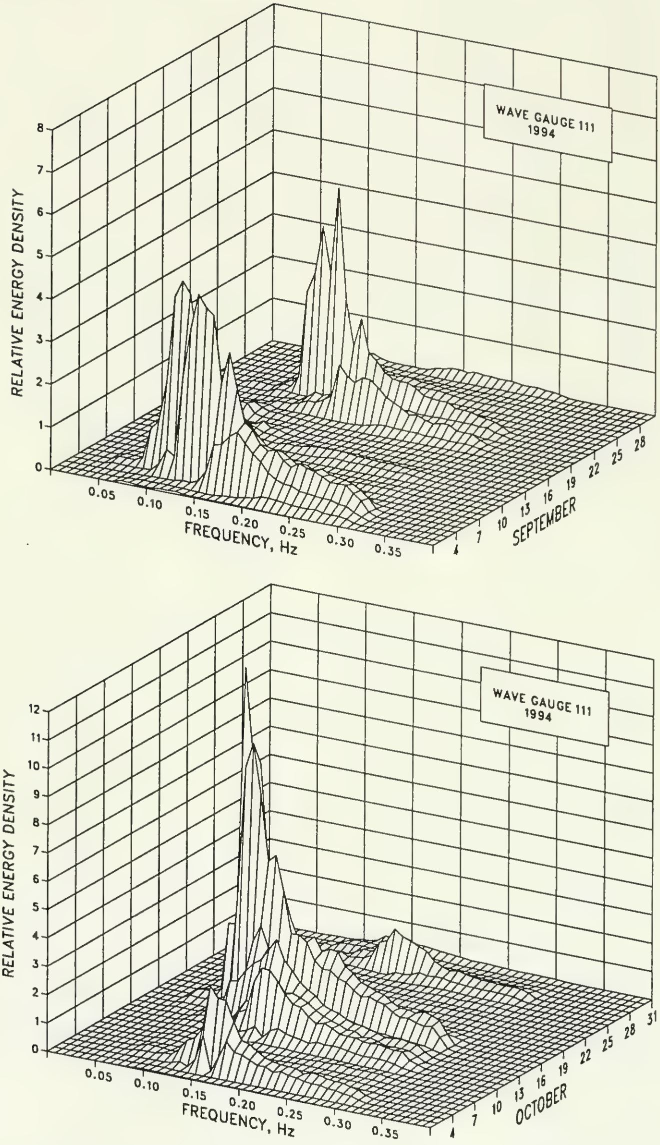


Figure C8. (Sheet 5 of 6)

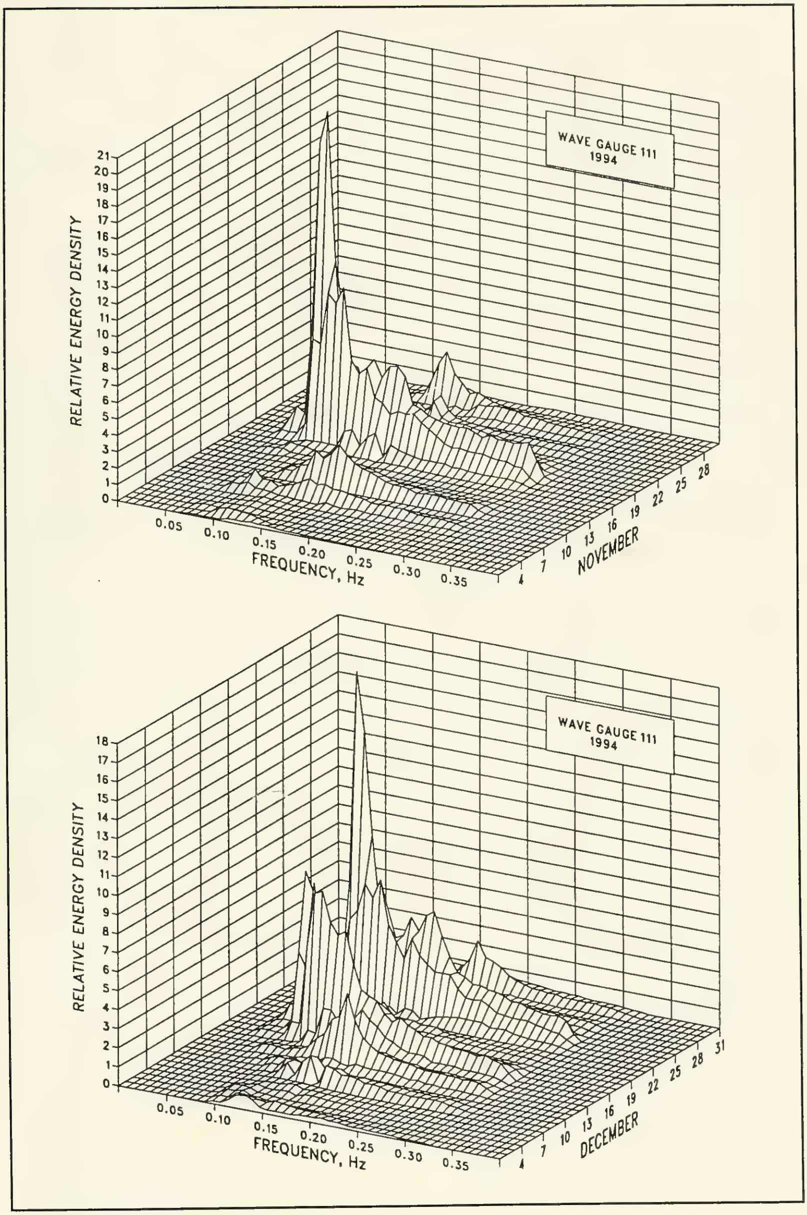


Figure C8. (Sheet 6 of 6)

Table C7
Wave statistics for Gauge 111

	1994							1985-1994						
	Height				Period			Height				Period		
Month	Mean m	Std. Dev. m	Extreme m	Date	Mean sec	Std. Dev. sec	Number Obs.	Mean m	Std. Dev. m	Extreme m	Date	Mean sec	Std. Dev. sec	Number Obs.
Jan	1.0	0.6	2.8	3	8.5	2.3	123	1.0	0.7	4.0	4	8.6	2.6	1206
Feb	0.9	0.5	2.2	10	8.7	1.7	112	1.0	0.6	4.0	24	8.6	2.4	1097
Mar	0.9	0.5	3.0	2	8.5	2.7	123	1.1	0.7	4.5	10	8.9	2.5	1216
Apr	0.7	0.4	2.0	22	9.1	3.0	119	1.0	0.6	4.8	13	9.2	2.7	1175
May	1.0	0.7	3.3	4	8.0	1.9	124	0.9	0.6	3.3	1994	8.9	2.7	1181
Jun	0.6	0.2	1.2	9	8.1	2.0	120	0.7	0.4	2.4	23	8.5	2.4	1162
Jul	0.5	0.1	0.7	21	9.1	2.0	116	0.6	0.3	1.9	1	8.6	2.5	1175
Aug	0.7	0.3	1.6	6	7.8	2.0	123	0.7	0.4	4.3	31	8.6	2.6	1156
Sep	0.9	0.6	2.7	4	9.8	3.2	120	0.9	0.6	4.0	25	8.9	2.7	1139
Oct	1.2	0.9	3.9	15	8.4	3.0	124	1.1	0.7	5.0	26	8.9	2.8	1200
Nov	1.2	1.0	4.6	18	9.3	3.0	120	1.1	0.7	4.6	1994	8.6	2.8	1171
Dec	1.5	0.9	4.1	23	9.6	2.7	124	1.1	0.8	4.5	24	8.9	3.1	1136
Annual	0.9	0.7	4.6	Nov	8.7	2.6	1448	0.9	0.6	5.0	Oct 1991	8.8	2.7	14014

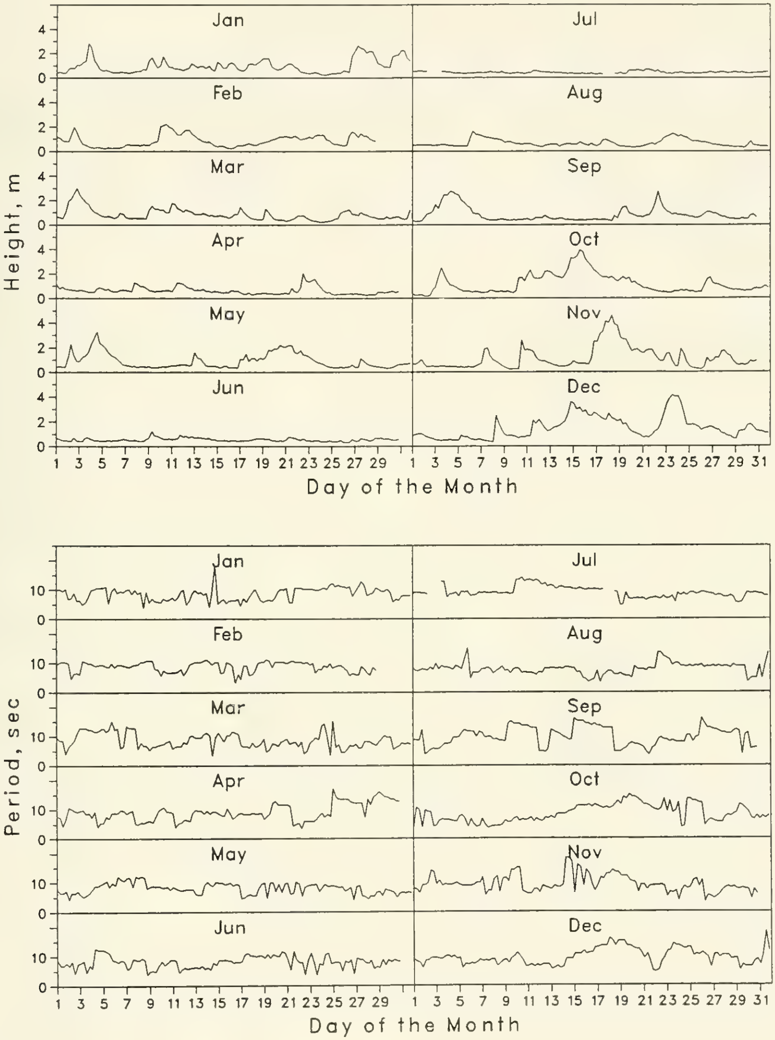


Figure C9. Time-histories of wave height and period for Gauge 111

Appendix D
Wave Data for Gauge 625

Wave data summaries for Gauge 625 for 1994 and for 1980 through 1994 are presented in the following pages.

Daily H_{mo} and T_p

Figure D1 displays the individual wave height H_{mo} and peak spectral wave period T_p values, along with the monthly mean values.

Joint Distributions of H_{mo} and T_p

Annual and monthly joint distribution tables are presented in Tables D1 and D2, and data for 1980 through 1994 are in Tables D3 and D4. Each table gives the frequency (in parts per 10,000) for which the wave height and peak period were within the specified intervals; these values can be converted to percentages by dividing by 100. Marginal totals are also included. The row total gives the number of observations out of 10,000 that fell within each specified peak period interval. The column total gives the number of observations out of 10,000 that fell within each specified wave height interval.

Cumulative Distributions of Wave Height

Annual and monthly wave height distributions for 1994 are plotted in cumulative form in Figures D2 and D3. Data for 1980 through 1994 are plotted in Figure D4.

Peak Spectral Wave Period Distributions

Annual and monthly peak wave period T_p distribution histograms for 1994 are presented in Figures D5 and D6. Data for 1980 through 1994 are presented in Figure D7.

Persistence of Wave Heights

Table D5 shows the number of times in 1994 when the specified wave height was equaled or exceeded at least once during each day for the duration (consecutive days). Data for 1980 through 1994 are averaged and given in Table D6. An example is shown below:

Height	Consecutive Day(s) or Longer																		
m	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19+
0.5	18	15		14	13	12		11	10	9				8		7			
1.0	50	34	24	21	18	14	12	8	7	3			2						
1.5	41	19	8	6	2	1													
2.0	22	9	5	1															
2.5	10	5	2																
3.0	6	1																	
3.5		1																	
4.0	1																		

This example indicates that wave heights equaled or exceeded 1.0 m 50 times for at least 1 day; 34 times for at least 2 days; 24 times for at least 3 days, etc. Therefore, on 16 occasions the height equaled or exceeded 1.0 m for 1 day exactly (50 - 34 = 16); on 10 occasions for 2 days; on 3 occasions for 3 days, etc. Note that the height exceeded 1 m 50 times for 1 day or longer, while heights exceeded 0.5 m only 18 times for this same duration. This change in durations occurred because the longer durations of lower waves may be interspersed with shorter, but more frequent, intervals of higher waves. For example, one of the times that the wave heights exceeded 0.5 m for 16 days may have represented three times the height exceeded 1 m for shorter durations.

Spectra

Monthly spectra for the offshore staff gauge (Gauge 625) are presented in Figure D8. The plots show "relative" energy density as a function of wave frequency. These figures summarize the large number of spectra for each month. The figures emphasize the higher energy density associated with storms, as well as the general shifts in energy density to different frequencies.

As used here, "relative" indicates the spectra have been smoothed by the three-dimensional surface drawing routine. Consequently, extremely high- and low-energy density values are modified to produce a smooth surface. The figures are not intended for quantitative measurements; however, they do provide the energy density as a function of frequency relative to the other spectra for the month.

Monthly and annual wave statistics for Gauge 625 for 1994 and for 1980 through 1994 are presented in Table D7.

Figure D9 plots monthly time histories of wave height and period.

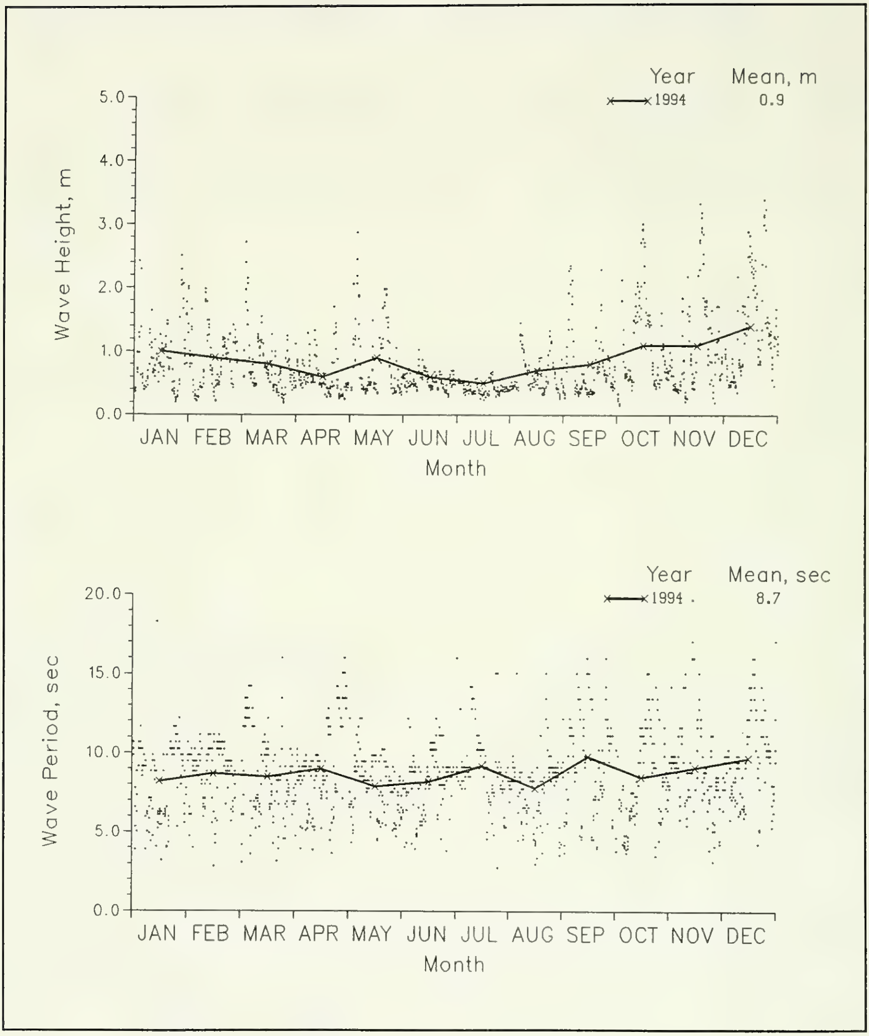


Figure D1. 1994 daily wave height and period values with monthly means for Gauge 625

Table D1
Annual Joint Distribution of H_{mo} versus T_p

Annual 1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	7	14	63	105	132	334	934	878	523	230	300	7	3527
0.50 - 0.99	14	139	355	383	467	411	690	648	481	84	160	28	3860
1.00 - 1.49	.	.	84	286	328	105	188	188	181	21	70	.	1451
1.50 - 1.99	.	.	.	77	188	125	70	49	56	21	49	.	635
2.00 - 2.49	.	.	.	.	21	70	42	42	49	28	63	.	315
2.50 - 2.99	.	.	.	.	.	.	.	35	84	14	21	.	154
3.00 - 3.49	.	.	.	.	.	.	.	.	14	28	21	.	63
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	21	153	502	851	1136	1045	1924	1840	1388	426	684	35	

Table D2
Monthly Joint Distribution of H_{mo} versus T_p

January 1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	.	.	.	.	.	.	164	902	1148	.	.	.	2214
0.50 - 0.99	.	246	492	738	574	164	492	738	574	.	.	164	4182
1.00 - 1.49	.	.	82	410	984	164	164	328	82	.	.	.	2214
1.50 - 1.99	.	.	.	82	164	246	82	82	.	.	.	.	656
2.00 - 2.49	.	.	.	.	.	164	82	164	82	.	164	.	656
2.50 - 2.99	.	.	.	.	.	.	.	.	82	.	.	.	82
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	246	574	1230	1722	738	984	2214	1968	0	164	164	

February 1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	89	.	179	89	.	179	446	1518	804	.	.	.	3304
0.50 - 0.99	.	.	89	179	179	89	536	893	1339	.	.	.	3304
1.00 - 1.49	.	.	89	89	625	268	625	625	536	.	.	.	2857
1.50 - 1.99	.	.	.	89	357	89	.	.	.	.	.	.	535
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	89	0	357	446	1161	625	1607	3036	2679	0	0	0	

March 1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	.	.	.	164	492	246	738	328	410	82	246	.	2706
0.50 - 0.99	.	328	246	246	738	574	410	1066	574	246	492	.	4920
1.00 - 1.49	.	.	246	164	902	164	82	.	82	.	82	.	1722
1.50 - 1.99	.	.	.	82	82	82	.	.	.	.	82	.	328
2.00 - 2.49	.	.	.	.	.	.	82	.	.	82	82	.	246
2.50 - 2.99	.	.	.	.	.	.	.	.	82	.	.	.	82
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	328	492	656	2214	1066	1312	1394	1148	410	984	0	

(Continued)

(Sheet 1 of 4)

Table D2 (Continued)

April 1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	.	.	.	84	.	588	1008	504	504	756	1092	.	4536
0.50 - 0.99	.	252	168	672	336	504	1092	1345	84	.	84	.	4537
1.00 - 1.49	.	.	.	588	168	.	.	84	.	.	.	.	840
1.50 - 1.99	.	.	.	.	84	.	.	.	.	.	.	.	84
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	252	168	1344	588	1092	2100	1933	588	756	1176	0	

May 1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	.	.	.	242	323	565	1613	1210	81	.	242	.	4276
0.50 - 0.99	.	.	242	645	323	403	403	242	242	.	.	.	2500
1.00 - 1.49	.	.	161	565	81	.	242	565	81	.	.	.	1695
1.50 - 1.99	.	.	.	242	323	161	.	161	242	.	.	.	1129
2.00 - 2.49	.	.	.	.	81	81	81	81	.	.	.	.	324
2.50 - 2.99	.	.	.	.	.	.	.	81	.	.	.	.	81
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	0	403	1694	1131	1210	2339	2340	646	0	242	0	

June 1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	.	.	84	.	84	840	1681	840	504	.	252	.	4285
0.50 - 0.99	.	168	504	672	1008	420	1176	672	924	.	84	.	5628
1.00 - 1.49	.	.	.	84	.	.	.	.	.	.	.	.	84
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	168	588	756	1092	1260	2857	1512	1428	0	336	0	

(Continued)

(Sheet 2 of 4)

Table D2 (Continued)

July 1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
	Period(sec)												
0.00 - 0.49	.	.	172	431	.	1034	2155	1638	1466	517	431	.	7844
0.50 - 0.99	86	.	.	86	517	259	431	259	.	172	345	.	2155
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	86	0	172	517	517	1293	2586	1897	1466	689	776	0	

August 1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
	Period(sec)												
0.00 - 0.49	.	82	246	246	492	492	1885	738	82	.	164	.	4427
0.50 - 0.99	82	164	656	246	820	246	1148	410	.	164	164	.	4100
1.00 - 1.49	.	.	82	246	82	164	492	164	246	.	.	.	1476
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	82	246	984	738	1394	902	3525	1312	328	164	328	0	

September 1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
	Period(sec)												
0.00 - 0.49	.	.	.	.	.	.	583	667	750	1083	1000	.	4083
0.50 - 0.99	.	83	667	500	83	667	417	83	1000	167	250	.	3917
1.00 - 1.49	.	.	167	250	83	.	167	83	167	.	.	.	917
1.50 - 1.99	.	.	.	83	83	83	.	.	83	.	167	.	499
2.00 - 2.49	.	.	.	.	.	250	83	167	83	.	.	.	583
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	83	834	833	249	1000	1250	1000	2083	1250	1417	0	

(Continued)

(Sheet 3 of 4)

Table D2 (Concluded)

October 1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	.	83	83	.	167	.	.	500	167	83	83	.	1166
0.50 - 0.99	.	250	917	333	417	417	833	250	500	250	250	.	4417
1.00 - 1.49	.	.	83	333	500	.	.	.	333	167	333	.	1749
1.50 - 1.99	.	.	.	83	583	167	250	83	250	83	83	.	1582
2.00 - 2.49	.	.	.	.	.	250	83	.	167	.	.	.	500
2.50 - 2.99	.	.	.	.	.	.	.	167	333	.	.	.	500
3.00 - 3.49	.	.	.	.	.	.	.	.	83	.	.	.	83
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	333	1083	749	1667	834	1166	1000	1833	583	749	0	

November 1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	.	.	.	.	.	87	435	1391	348	261	87	87	2696
0.50 - 0.99	.	174	261	174	261	609	957	522	435	.	174	87	3654
1.00 - 1.49	.	.	.	261	174	261	261	87	.	.	.	.	1044
1.50 - 1.99	.	.	.	261	174	348	435	174	87	.	.	.	1479
2.00 - 2.49	.	.	.	.	87	87	87	.	87	.	.	.	348
2.50 - 2.99	.	.	.	.	.	.	.	.	261	87	174	.	522
3.00 - 3.49	.	.	.	.	.	.	.	.	.	87	174	.	261
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	174	261	696	696	1392	2175	2174	1218	435	609	174	

December 1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	.	.	.	.	.	.	484	403	81	.	.	.	968
0.50 - 0.99	.	.	.	81	323	565	403	1290	161	.	81	81	2985
1.00 - 1.49	.	.	81	403	323	242	242	323	645	81	403	.	2743
1.50 - 1.99	.	.	.	.	403	323	81	81	.	161	242	.	1291
2.00 - 2.49	.	.	.	.	81	.	.	81	161	242	484	.	1049
2.50 - 2.99	.	.	.	.	.	.	.	161	242	81	81	.	565
3.00 - 3.49	.	.	.	.	.	.	.	.	81	242	81	.	404
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	0	81	484	1130	1130	1210	2339	1371	807	1372	81	

(Sheet 4 of 4)

Table D3
Annual Joint Distribution of H_{mo} versus T_p (All Years)

Annual 1980-1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	10	23	42	66	113	243	584	548	428	187	262	20	2526
0.50 - 0.99	7	99	256	436	450	420	725	768	804	157	286	29	4437
1.00 - 1.49	.	4	98	298	327	197	200	194	325	44	131	2	1820
1.50 - 1.99	.	.	3	64	175	93	65	63	135	38	68	4	708
2.00 - 2.49	.	.	.	1	36	46	27	34	69	38	45	2	298
2.50 - 2.99	.	.	.	.	3	11	19	25	47	17	33	2	157
3.00 - 3.49	.	.	.	.	1	.	5	7	17	8	13	1	52
3.50 - 3.99	.	.	.	.	.	.	.	.	2	2	2	1	7
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	17	126	399	865	1105	1010	1625	1639	1827	491	840	61	

Table D4

Monthly Joint Distribution of H_{mo} versus T_p (All Years)

January 1980-1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	6	32	39	71	96	180	321	565	417	122	160	13	2022
0.50 - 0.99	.	160	244	424	513	276	597	533	822	116	205	19	3909
1.00 - 1.49	.	.	116	546	565	212	199	186	417	6	71	.	2318
1.50 - 1.99	.	.	.	77	237	193	77	109	167	39	32	.	931
2.00 - 2.49	.	.	.	.	58	128	51	51	154	32	90	.	564
2.50 - 2.99	.	.	.	.	6	13	26	39	71	19	32	.	206
3.00 - 3.49	.	.	.	.	.	.	.	6	19	13	.	.	38
3.50 - 3.99	.	.	.	.	.	.	.	.	6	6	.	.	12
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	6	192	399	1118	1475	1002	1271	1489	2073	353	590	32	

February 1980-1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	7	13	33	39	52	78	254	390	332	72	163	.	1433
0.50 - 0.99	13	52	176	377	371	364	670	742	1093	59	260	7	4184
1.00 - 1.49	.	7	117	358	462	260	299	247	540	52	189	.	2531
1.50 - 1.99	.	.	.	124	306	111	78	104	195	59	85	.	1062
2.00 - 2.49	.	.	.	.	33	78	39	46	78	72	104	.	450
2.50 - 2.99	.	.	.	.	.	13	13	33	91	20	85	.	255
3.00 - 3.49	.	.	.	.	.	.	20	7	26	7	7	.	67
3.50 - 3.99	.	.	.	.	.	.	.	.	7	7	13	.	27
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	20	72	326	898	1224	904	1373	1569	2362	348	906	7	

March 1980-1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	17	6	6	69	81	98	312	225	323	115	179	.	1431
0.50 - 0.99	12	69	214	497	468	508	641	664	993	121	370	.	4557
1.00 - 1.49	.	6	144	283	358	260	179	214	572	40	300	.	2356
1.50 - 1.99	.	.	.	69	162	75	81	75	248	58	150	6	924
2.00 - 2.49	.	.	.	6	46	46	35	40	110	64	58	.	405
2.50 - 2.99	.	.	.	.	.	6	23	17	81	35	58	.	220
3.00 - 3.49	.	.	.	.	.	.	12	12	46	12	29	.	111
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	29	81	364	924	1115	993	1283	1247	2373	445	1144	6	

(Continued)

(Sheet 1 of 4)

Table D4 (Continued)

April 1980-1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	12	18	12	55	43	146	455	383	383	206	389	.	2102
0.50 - 0.99	6	79	164	383	358	401	880	984	1129	213	510	12	5119
1.00 - 1.49	.	6	91	219	219	182	188	261	310	36	152	.	1664
1.50 - 1.99	.	.	6	36	115	43	73	97	237	12	73	.	692
2.00 - 2.49	.	.	.	6	24	6	30	24	97	30	6	.	223
2.50 - 2.99	.	.	.	.	6	18	24	18	43	30	6	.	145
3.00 - 3.49	.	.	.	.	.	.	.	6	30	.	18	.	54
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	18	103	273	699	765	796	1650	1773	2229	527	1154	12	

May 1980-1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	23	23	40	97	182	318	653	648	551	222	364	6	3127
0.50 - 0.99	6	142	324	386	489	477	977	989	648	97	199	11	4745
1.00 - 1.49	.	.	63	148	125	165	290	216	290	17	74	.	1388
1.50 - 1.99	.	.	.	74	85	28	57	63	108	11	51	.	477
2.00 - 2.49	.	.	.	.	51	28	23	23	6	28	17	6	182
2.50 - 2.99	.	.	.	.	.	.	11	11	28	17	11	.	78
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	6	.	6
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	29	165	427	705	932	1016	2011	1950	1631	392	722	23	

June 1980-1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	26	45	71	71	277	484	1361	884	523	135	168	13	4058
0.50 - 0.99	6	129	277	465	439	477	1129	1013	632	97	123	32	4819
1.00 - 1.49	.	.	45	142	148	103	110	103	155	.	32	6	844
1.50 - 1.99	.	.	.	26	45	19	13	6	97	.	39	.	245
2.00 - 2.49	.	.	.	.	6	13	6	6	6	.	.	.	37
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	32	174	393	704	915	1096	2619	2012	1413	232	362	51	

(Continued)

(Sheet 2 of 4)

Table D4 (Continued)

July 1980-1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	7	74	140	134	201	682	1538	1324	742	368	375	54	5639
0.50 - 0.99	13	134	288	408	535	502	656	562	334	214	154	54	3854
1.00 - 1.49	.	.	33	114	100	74	47	27	33	.	13	.	441
1.50 - 1.99	.	.	.	7	13	13	13	7	7	.	.	.	60
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	20	208	461	663	849	1271	2254	1920	1116	582	542	108	

August 1980-1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	.	32	51	64	210	491	1045	848	599	223	217	6	3786
0.50 - 0.99	19	115	280	504	548	625	911	803	599	191	274	57	4926
1.00 - 1.49	.	.	76	178	166	127	204	83	70	13	6	.	923
1.50 - 1.99	.	.	.	32	76	32	13	6	51	13	25	.	248
2.00 - 2.49	.	.	.	.	13	6	.	.	25	.	32	.	76
2.50 - 2.99	.	.	.	.	.	.	6	6	6	.	.	.	18
3.00 - 3.49	.	.	.	.	6	.	.	6	6	.	.	.	18
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	19	147	407	778	1019	1281	2179	1752	1356	440	554	63	

September 1980-1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	.	7	35	21	56	119	293	398	391	251	279	42	1892
0.50 - 0.99	.	91	272	342	405	475	663	782	1006	161	419	.	4616
1.00 - 1.49	.	.	70	356	314	265	293	300	363	98	168	.	2227
1.50 - 1.99	.	.	.	98	216	126	84	84	70	42	84	7	811
2.00 - 2.49	.	.	.	.	14	98	49	28	21	63	49	7	329
2.50 - 2.99	.	.	.	.	.	7	21	21	35	.	21	.	105
3.00 - 3.49	.	.	.	.	.	.	.	.	21	.	.	.	21
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	98	377	817	1005	1090	1403	1613	1907	615	1020	56	

(Continued)

(Sheet 3 of 4)

Table D4 (Concluded)

October 1980-1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	6	6	23	45	23	113	254	248	293	90	237	28	1366
0.50 - 0.99	.	96	265	344	361	315	625	738	924	214	299	28	4209
1.00 - 1.49	.	6	158	411	423	158	146	270	462	113	220	11	2378
1.50 - 1.99	.	.	23	90	254	79	101	68	220	96	107	17	1055
2.00 - 2.49	.	.	.	.	68	79	56	85	141	56	51	6	542
2.50 - 2.99	.	.	.	.	11	39	51	51	56	23	62	17	310
3.00 - 3.49	.	.	.	.	.	.	17	17	17	34	28	11	124
3.50 - 3.99	.	.	.	.	.	.	.	.	11	6	.	6	23
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	6	108	469	890	1140	783	1250	1477	2124	632	1004	124	

November 1980-1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	6	12	36	72	42	132	366	402	270	222	282	54	1896
0.50 - 0.99	6	60	360	498	504	366	612	648	624	228	282	30	4218
1.00 - 1.49	.	24	126	348	534	306	258	204	300	90	126	6	2322
1.50 - 1.99	.	.	.	84	258	198	126	84	102	66	48	12	978
2.00 - 2.49	.	.	.	.	66	30	24	18	66	42	42	.	288
2.50 - 2.99	.	.	.	.	.	12	24	48	60	24	42	.	210
3.00 - 3.49	.	.	.	.	.	.	6	6	24	12	30	.	78
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	12	.	12
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	12	96	522	1002	1404	1044	1416	1410	1446	684	864	102	

December 1980-1994, Gauge 625
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	13	19	32	58	109	122	257	359	353	244	327	26	1919
0.50 - 0.99	.	64	205	603	411	257	321	731	821	167	327	103	4010
1.00 - 1.49	.	.	122	475	500	250	186	199	346	51	192	.	2321
1.50 - 1.99	.	.	.	51	334	212	58	45	90	51	109	.	950
2.00 - 2.49	.	.	.	.	45	38	6	77	115	64	90	.	435
2.50 - 2.99	.	.	.	.	6	19	19	51	83	32	71	.	281
3.00 - 3.49	.	.	.	.	.	.	.	19	13	19	32	.	83
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	13	83	359	1187	1405	898	847	1481	1821	628	1148	129	

(Sheet 4 of 4)

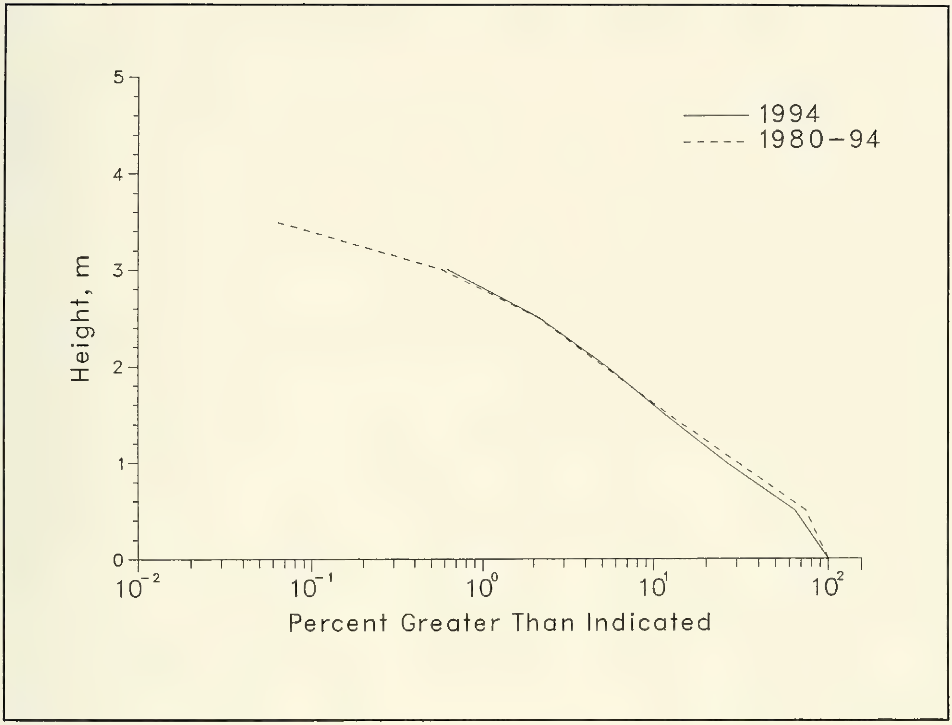


Figure D2. Annual cumulative wave height distributions for Gauge 625

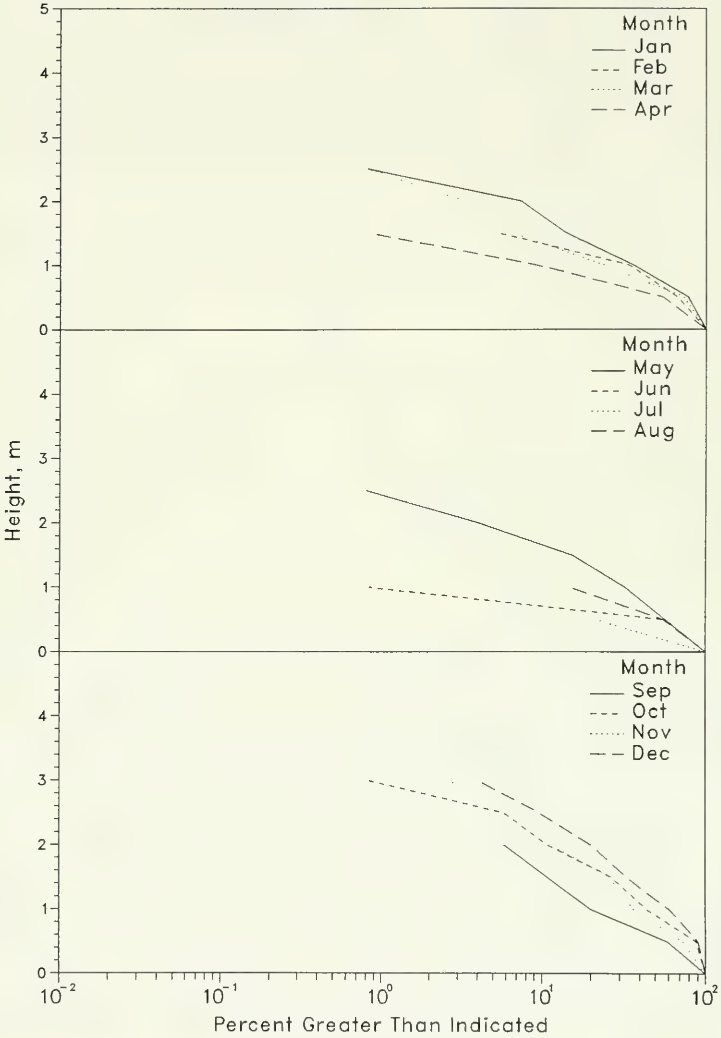


Figure D3. 1994 monthly wave height distributions for Gauge 625

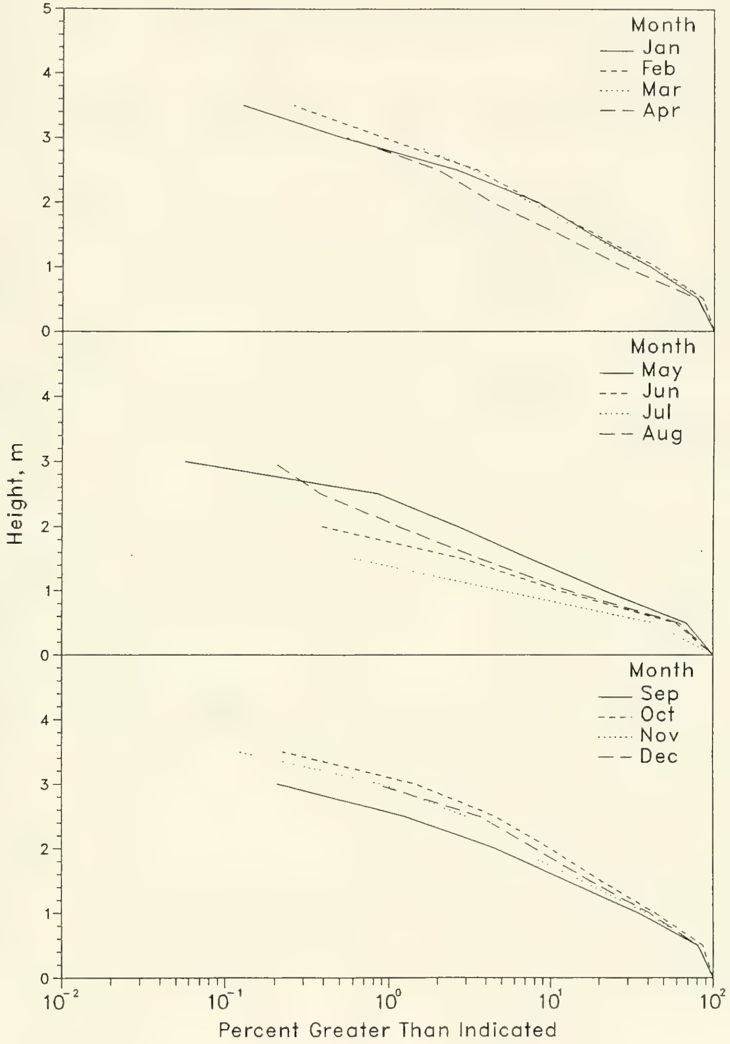


Figure D4. 1980-1994 monthly wave height distributions for Gauge 625

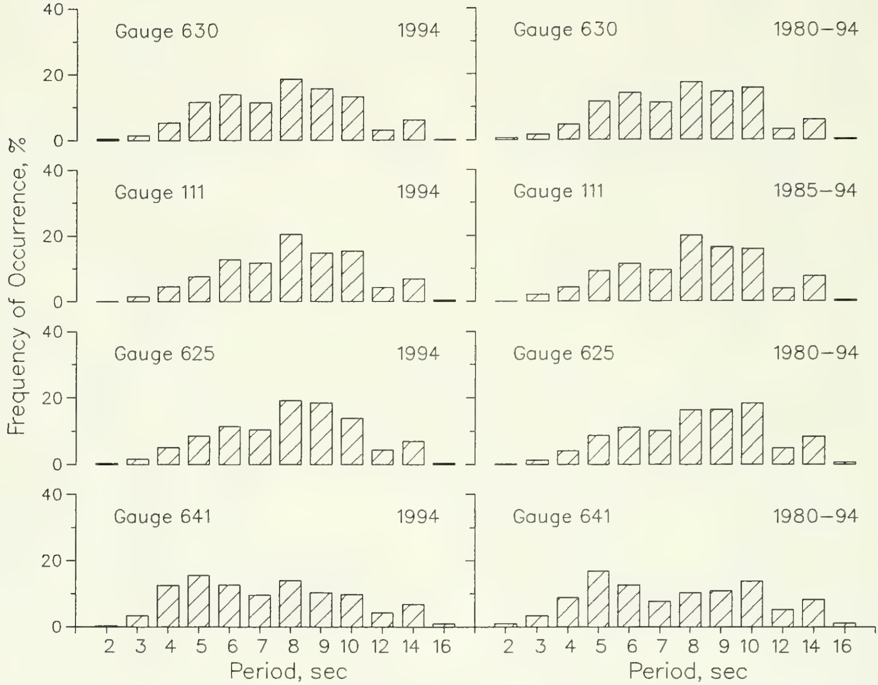


Figure D5. Annual wave period distributions for all gauges

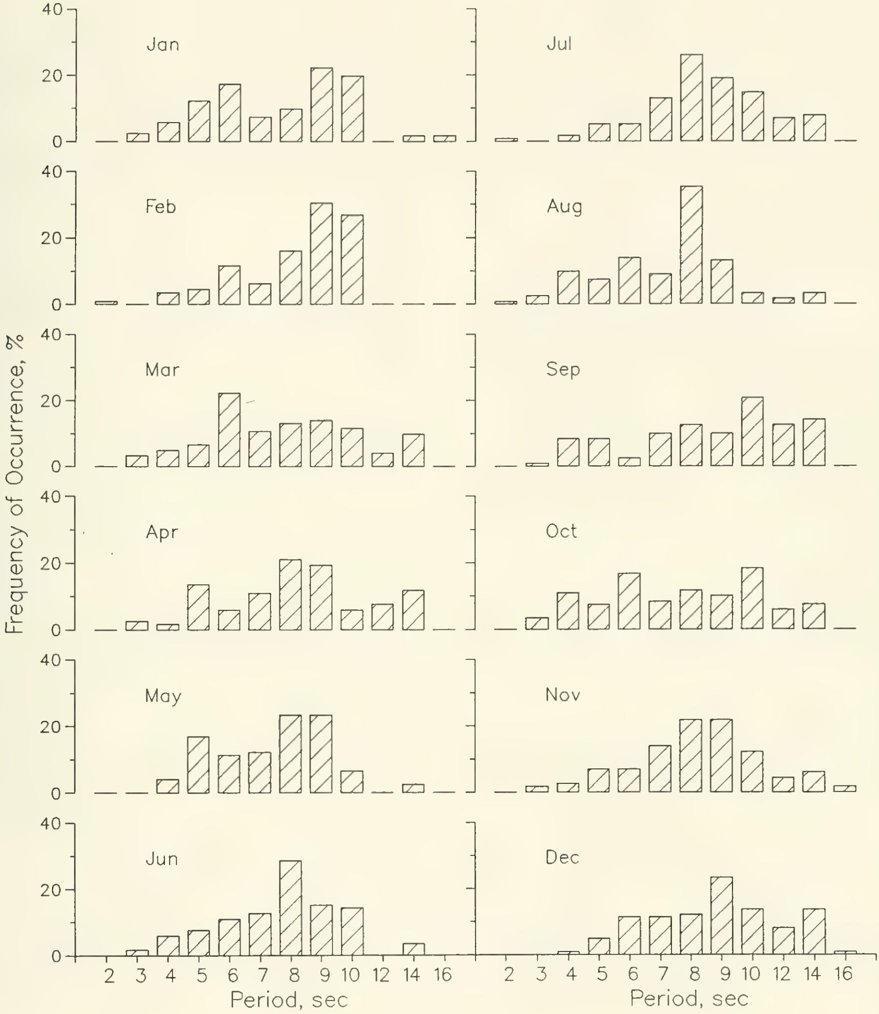


Figure D6. 1994 monthly wave period distributions for Gauge 625

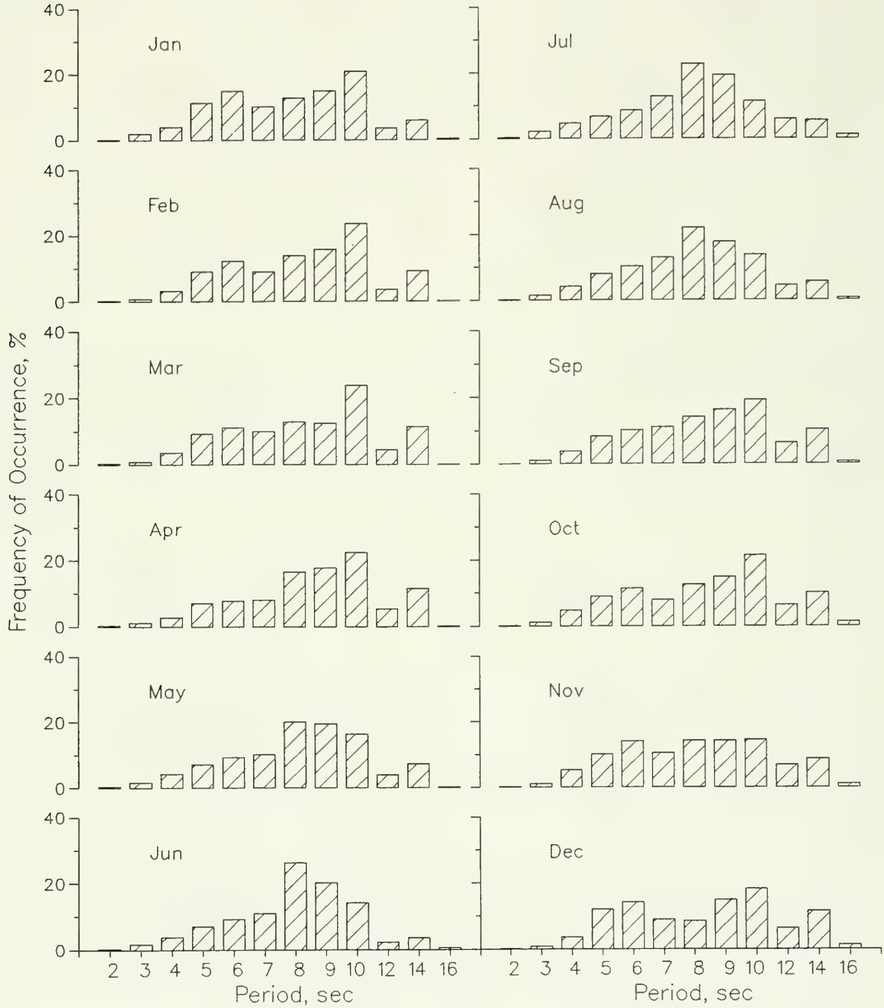


Figure D7. 1980-1994 monthly wave period distributions for Gauge 625

Table D5
1994 persistence of H_{mo} for Gauge 625

Height	Consecutive Day(s) or Longer																		
(m)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19+
0.5	39	31	27	23		19	15	13	12				9		6	5	4		3
1.0	39	26	16	12	9		5	4	3		2						1		
1.5	26	15	8	6		3				1									
2.0	16	8	5	2	1														
2.5	7	4	3																
3.0	3	2																	
3.5																			

Table D6
1980 through 1994 persistence of H_{mo} for Gauge 625

Height	Consecutive Day(s) or Longer																		
(m)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19+
0.5	29	26	22	20	17	16	14	12	11	10	9	8	7		6		5		4
1.0	45	31	21		14	7	5	4	3	2			1						
1.5	29	16	9	5	2	1													
2.0	15	8	4	2	1														
2.5	8	4	2	1															
3.0	3	1																	
3.5	1																		
4.0																			

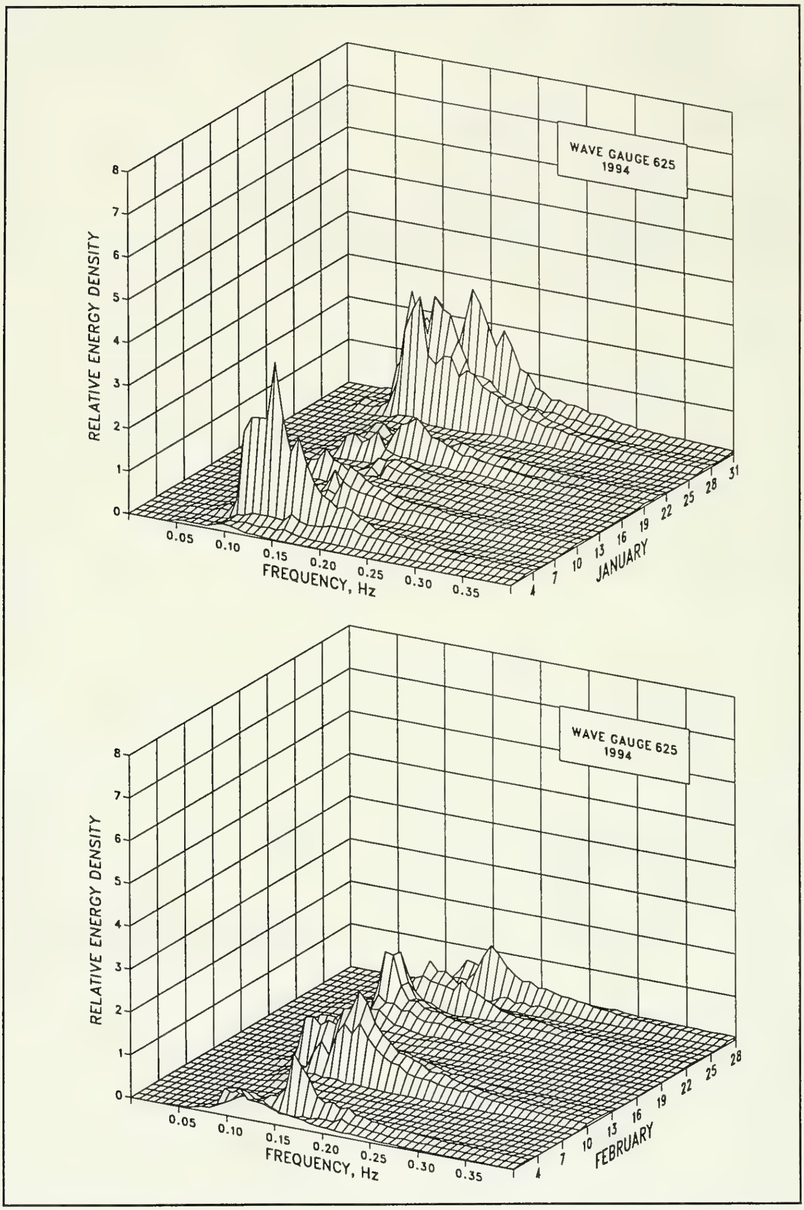


Figure D8. 1994 monthly spectra for Gauge 625 (Sheet 1 of 6)

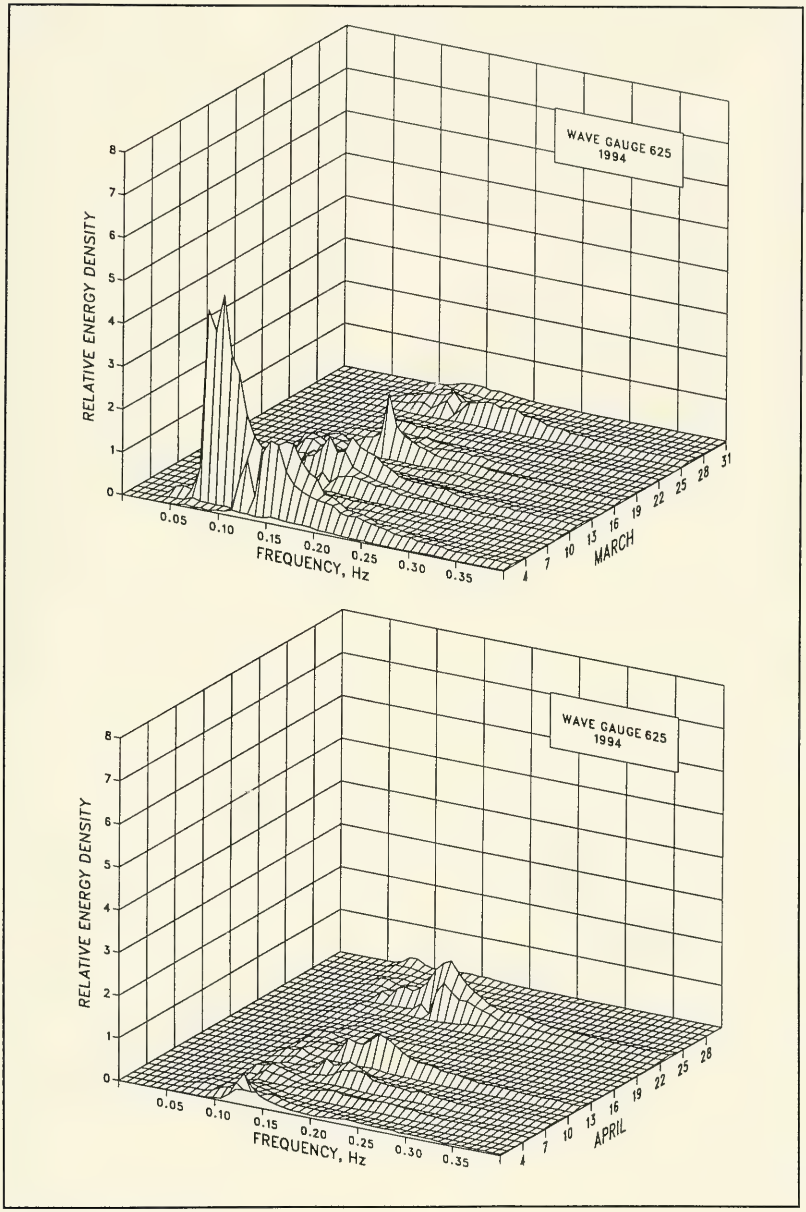


Figure D8. (Sheet 2 of 6)

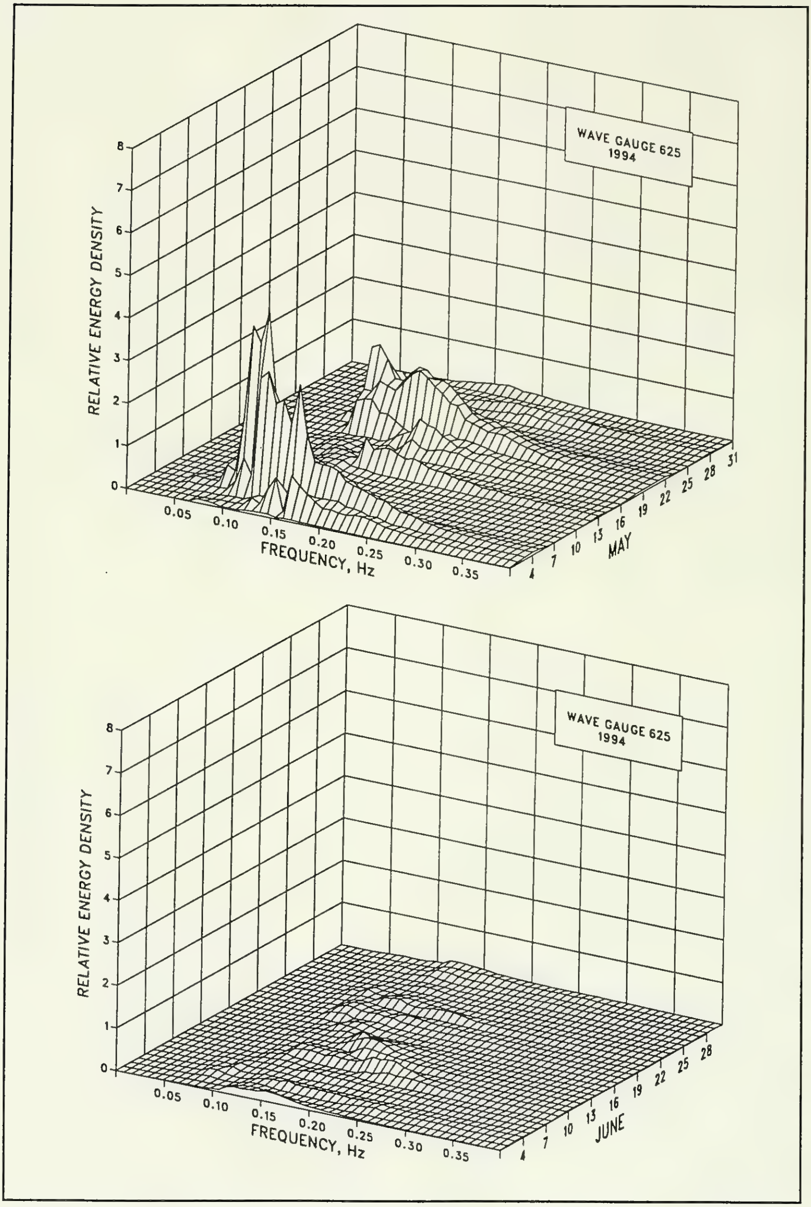


Figure D8. (Sheet 3 of 6)

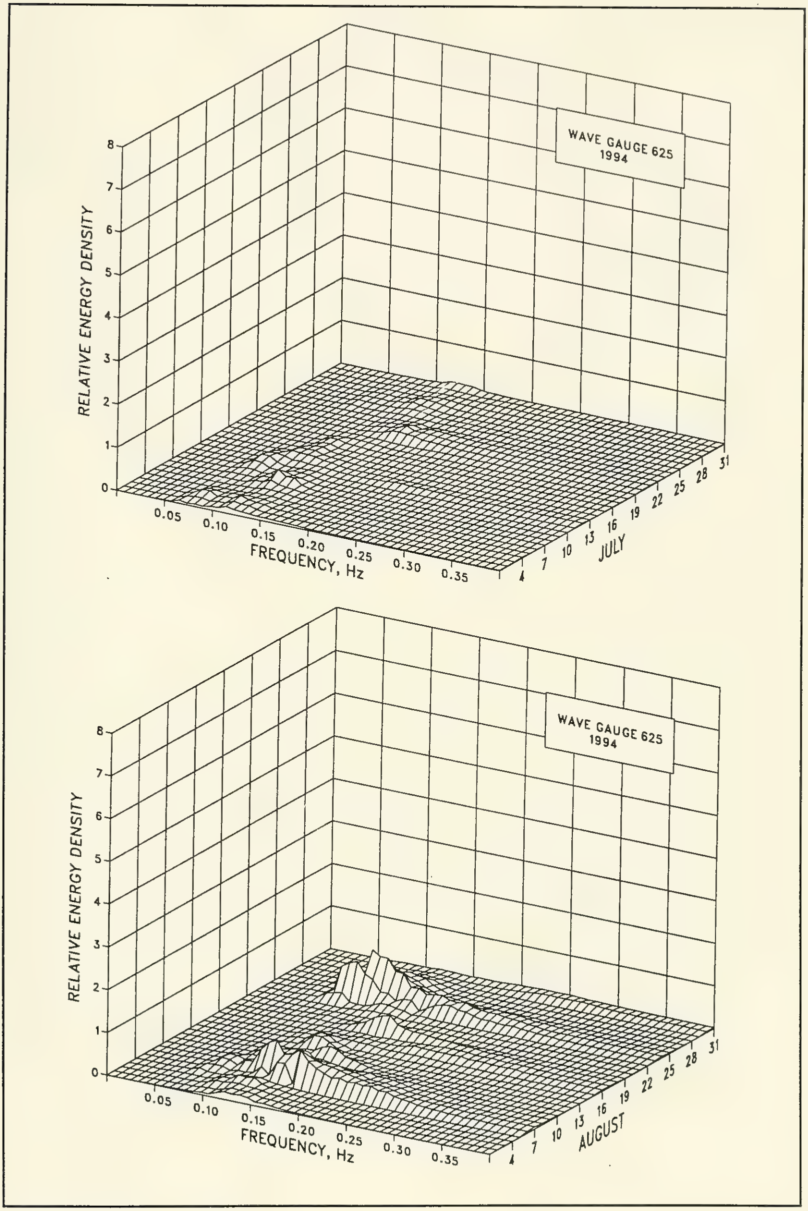


Figure D8. (Sheet 4 of 6)

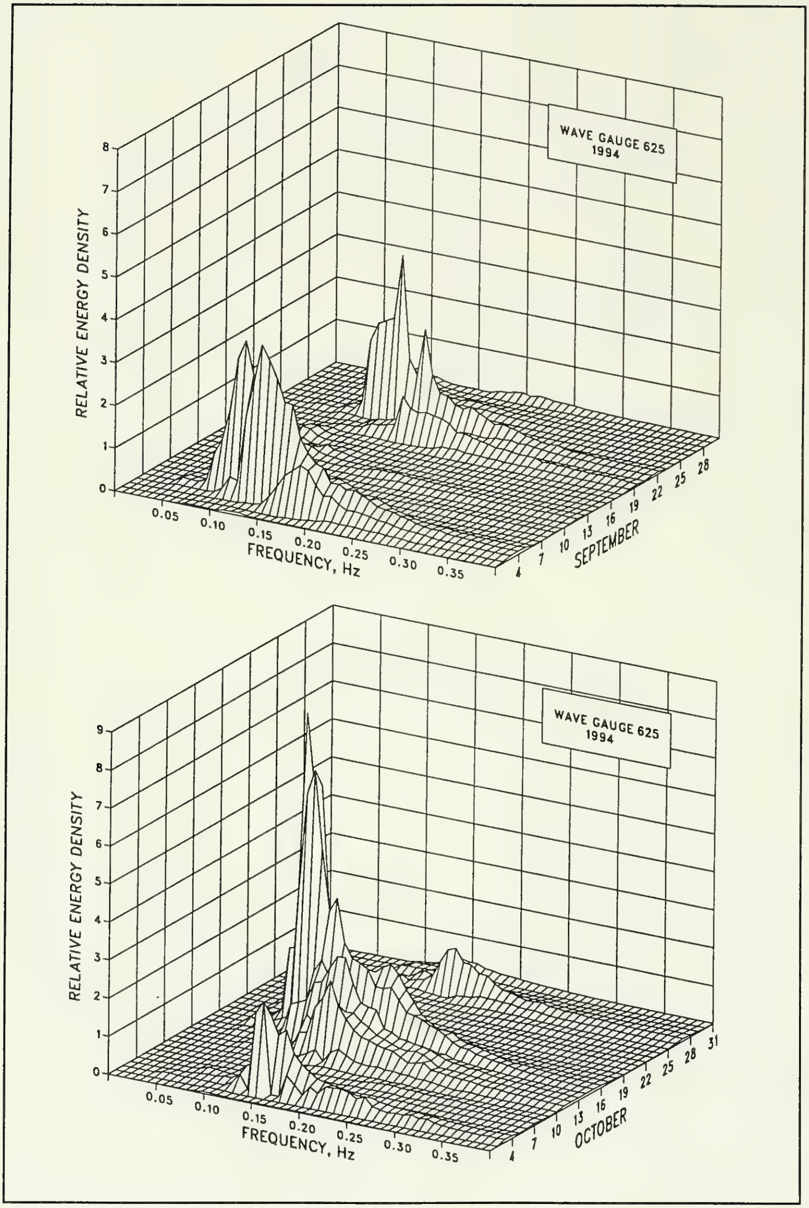


Figure D8. (Sheet 5 of 6)

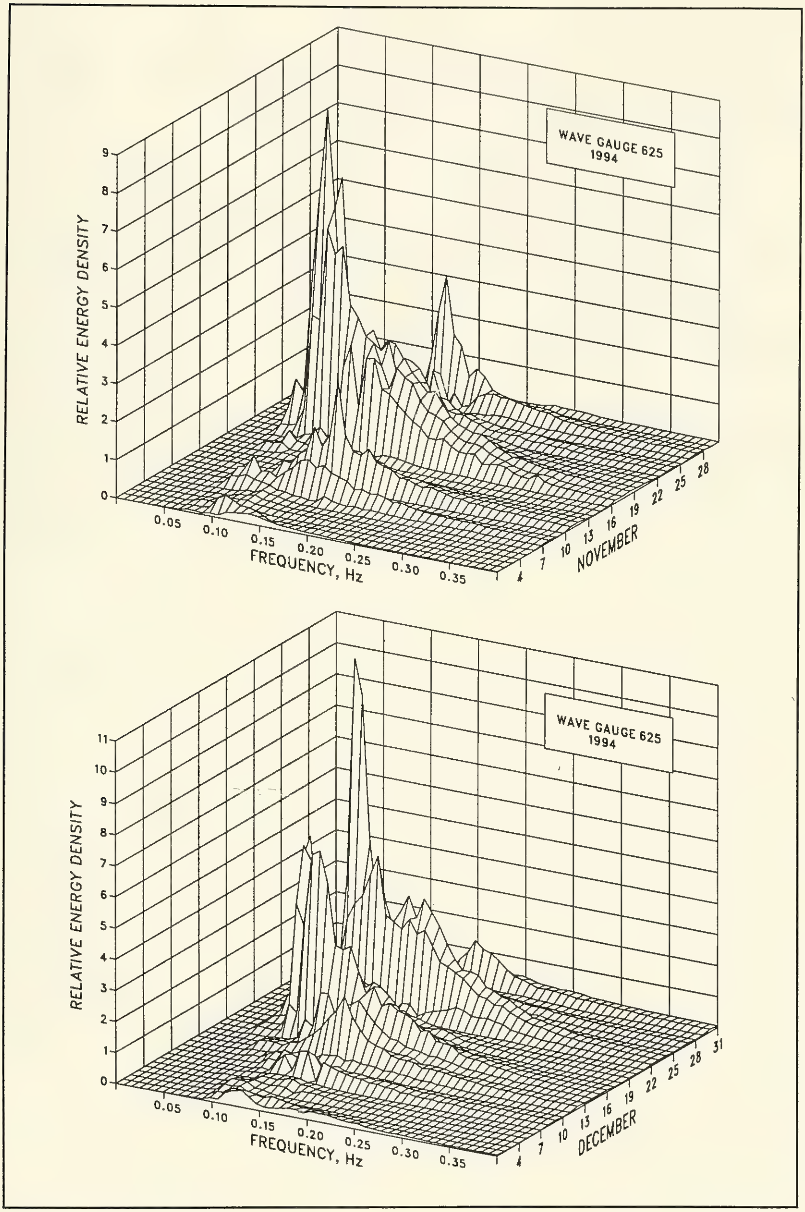


Figure D8. (Sheet 6 of 6)

Table D7
Wave statistics for Gauge 625

	1994							1980-1994						
	Height				Period			Height				Period		
Month	Mean m	Std. Dev. m	Extreme m	Date	Mean sec	Std. Dev. sec	Number Obs.	Mean m	Std. Dev. m	Extreme m	Date	Mean sec	Std. Dev. sec	Number Obs.
Jan	1.0	0.6	2.5	27	8.2	2.6	122	1.0	0.6	3.6	1992	8.5	2.7	1558
Feb	0.9	0.5	2.0	10	8.7	1.9	112	1.1	0.6	3.8	1989	8.9	2.6	1537
Mar	0.8	0.5	2.7	2	8.5	2.7	122	1.1	0.6	3.4	1983	9.0	2.7	1732
Apr	0.6	0.3	1.7	22	9.0	2.8	119	0.9	0.6	3.4	1988	9.3	2.7	1647
May	0.9	0.6	2.9	4	7.9	1.8	124	0.8	0.5	3.0	1986	8.7	2.6	1760
Jun	0.6	0.2	1.0	9	8.2	2.0	119	0.7	0.4	2.3	1983	8.5	2.3	1550
Jul	0.5	0.1	0.7	21	9.2	2.4	116	0.6	0.3	1.8	1985	8.7	2.7	1495
Aug	0.7	0.3	1.5	6	7.8	2.3	122	0.7	0.4	3.1	1981	8.6	2.6	1569
Sep	0.8	0.6	2.3	4	9.8	3.3	120	0.9	0.6	3.2	1992	9.1	2.8	1432
Oct	1.1	0.7	3.0	15	8.5	3.0	120	1.1	0.7	3.5	1991	9.1	2.9	1775
Nov	1.1	0.8	3.3	17	9.1	2.8	115	1.0	0.6	3.5	1981	8.8	3.0	1667
Dec	1.4	0.8	3.4	23	9.7	2.8	124	1.0	0.7	3.4	1994	9.1	3.1	1559
Annual	0.9	0.6	3.4	Dec	8.7	2.7	1435	0.9	0.6	3.8	Feb 1992	8.9	2.7	19281

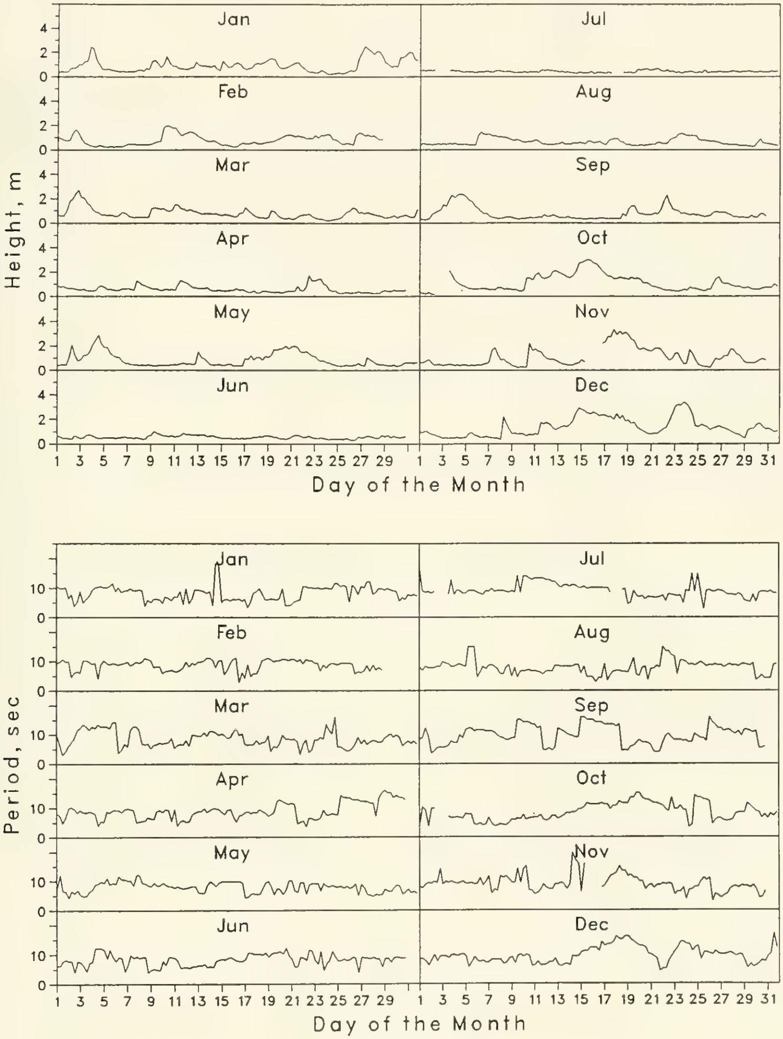


Figure D9. Time-histories of wave height and period for Gauge 625

Appendix E
Wave Data for Gauge 641

Wave data summaries for Gauge 641 for 1994 and for 1980 through 1994[1] are presented in the following pages.

Daily H_{mo} and T_p

Figure E1 displays the individual wave height H_{mo} and peak spectral wave period T_p values, along with the monthly mean values.

Joint Distributions of H_{mo} and T_p

Annual and monthly joint distribution tables are presented in Tables E1 and E2, and data for 1980 through 1994 are in Tables E3 and E4. Each table gives the frequency (in parts per 10,000) for which the wave height and peak period were within the specified intervals; these values can be converted to percentages by dividing by 100. Marginal totals are also included. The row total gives the number of observations out of 10,000 that fell within each specified peak period interval. The column total gives the number of observations out of 10,000 that fell within each specified wave height interval.

Cumulative Distributions of Wave Height

Annual and monthly wave height distributions for 1994 are plotted in cumulative form in Figures E2 and E3. Data for 1980 through 1994 are plotted in Figure E4.

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[1] Data from 1980 through May 1992 are from staff Gauge 645 which was replaced by pressure Gauge 641 in November 1992.

Peak Spectral Wave Period Distributions

Annual and monthly peak wave period T_p distribution histograms for 1994 are presented in Figures E5 and E6. Data for 1980 through 1994 are presented in Figure E7.

Persistence of Wave Heights

Table E5 shows the number of times in 1994 when the specified wave height was equaled or exceeded at least once during each day for the duration (consecutive days). Data for 1980 through 1994 are averaged and given in Table E6. An example is shown below:

Height	Consecutive Day(s) or Longer																		
m	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19+
0.5	18	15		14	13	12		11	10	9				8		7			
1.0	50	34	24	21	18	14	12	8	7	3			2						
1.5	41	19	8	6	2	1													
2.0	22	9	5	1															
2.5	10	5	2																
3.0	6	1																	
3.5		1																	
4.0	1																		

This example indicates that wave heights equaled or exceeded 1.0 m 50 times for at least 1 day; 34 times for at least 2 days; 24 times for at least 3 days, etc. Therefore, on 16 occasions the height equaled or exceeded 1.0 m for 1 day exactly (50 - 34 = 16); on 10 occasions for 2 days; on 3 occasions for 3 days, etc. Note that the height exceeded 1 m 50 times for 1 day or longer, while heights exceeded 0.5 m only 18 times for this same duration. This change in durations occurred because the longer durations of lower waves may be interspersed with shorter, but more frequent, intervals of higher waves. For example, one of the times that the wave heights exceeded 0.5 m for 16 days may have represented three times the height exceeded 1 m for shorter durations.

Spectra

Monthly spectra for the inshore pressure gauge (Gauge 641) are presented in Figure E8. The plots show "relative" energy density as a function of wave frequency. These figures summarize the large number of spectra for each month. The figures emphasize the higher energy density associated with storms, as well as the general shifts in energy density to different frequencies.

As used here, "relative" indicates the spectra have been smoothed by the three-dimensional surface drawing routine. Consequently, extremely high- and low-energy density values are modified to produce a smooth surface. The figures are not intended for quantitative measurements; however, they do provide the energy density as a function of frequency relative to the other spectra for the month.

Monthly and annual wave statistics for Gauge 641 for 1994 and for 1980 through 1994 are presented in Table E7.

Figure E9 plots monthly time histories of wave height and period.

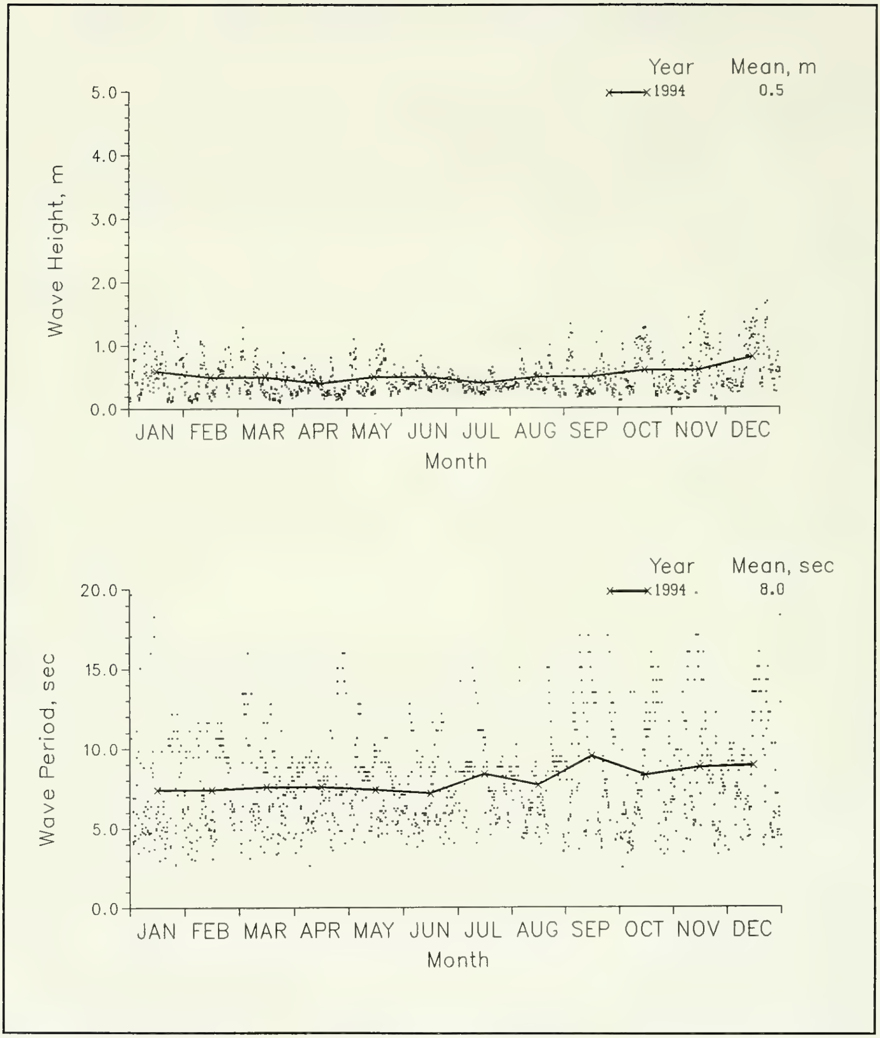

Figure E1. 1994 daily wave height and period values with monthly means for Gauge 641

Table E1
Annual Joint Distribution of H_{mo} versus T_p

Annual 1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	28	287	728	721	518	651	1155	756	651	245	441	91	6272
0.50 - 0.99	.	56	525	812	630	231	175	217	210	91	126	7	3080
1.00 - 1.49	.	.	.	21	112	77	63	56	105	77	105	.	616
1.50 - 1.99	.	.	.	.	.	.	.	.	7	7	14	.	28
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	28	343	1253	1554	1260	959	1393	1029	973	420	686	98	

Table E2
Monthly Joint Distribution of H_{mo} versus T_p

January 1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	167	667	1000	667	83	.	83	250	1000	.	333	500	4750
0.50 - 0.99	.	83	1167	1083	1000	250	250	417	167	.	83	.	4500
1.00 - 1.49	.	.	.	.	167	250	167	83	83	.	.	.	750
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	167	750	2167	1750	1250	500	500	750	1250	0	416	500	

February 1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	.	654	1495	654	374	.	374	1028	1215	.	.	.	5794
0.50 - 0.99	.	.	93	748	841	467	.	841	841	.	.	.	3831
1.00 - 1.49	.	.	.	93	280	.	.	.	.	.	.	.	373
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	654	1588	1495	1495	467	374	1869	2056	0	0	0	

March 1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	.	410	738	492	984	738	1066	984	656	82	410	.	6560
0.50 - 0.99	.	82	574	656	820	492	164	82	.	246	164	.	3280
1.00 - 1.49	.	.	.	.	.	.	.	.	.	82	82	.	164
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	492	1312	1148	1804	1230	1230	1066	656	410	656	0	

(Continued)

(Sheet 1 of 4)

Table E2 (Continued)

April 1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	84	168	672	840	840	1849	1933	840	168	420	336	.	8150
0.50 - 0.99	.	168	336	924	.	252	84	84	.	.	.	.	1848
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	84	336	1008	1764	840	2101	2017	924	168	420	336	0	

May 1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	.	.	323	565	645	806	2339	565	81	.	484	.	5808
0.50 - 0.99	.	.	806	1371	645	242	161	484	242	.	.	.	3951
1.00 - 1.49	.	.	.	.	161	.	.	.	81	.	.	.	242
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	0	1129	1936	1451	1048	2500	1049	404	0	484	0	

June 1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	.	.	588	1849	756	924	1008	588	924	.	420	.	7057
0.50 - 0.99	.	84	588	1513	504	84	84	.	84	.	.	.	2941
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	84	1176	3362	1260	1008	1092	588	1008	0	420	0	

(Continued)

(Sheet 2 of 4)

Table E2 (Continued)

July 1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	.	.	345	1466	345	1121	3017	776	1293	517	259	.	9139
0.50 - 0.99	.	.	.	86	603	172	.	.	.	.	.	.	861
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	0	345	1552	948	1293	3017	776	1293	517	259	0	

August 1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	.	163	732	569	1138	569	2114	1382	81	81	163	.	6992
0.50 - 0.99	.	.	488	569	894	.	163	244	244	163	163	.	2928
1.00 - 1.49	.	.	.	.	.	.	.	.	81	.	.	.	81
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	163	1220	1138	2032	569	2277	1626	406	244	326	0	

September 1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	.	169	932	339	339	424	254	424	1017	932	1695	254	6779
0.50 - 0.99	.	169	424	678	169	254	254	85	339	169	169	.	2710
1.00 - 1.49	.	.	.	85	85	85	85	85	.	.	85	.	510
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	338	1356	1102	593	763	593	594	1356	1101	1949	254	

(Continued)

(Sheet 3 of 4)

Table E2 (Concluded)

October 1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	81	650	1220	732	325	244	325	163	488	650	488	.	5366
0.50 - 0.99	.	.	163	732	732	163	407	.	488	163	407	.	3255
1.00 - 1.49	.	.	.	81	163	244	.	244	407	.	244	.	1383
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	81	650	1383	1545	1220	651	732	407	1383	813	1139	0	

November 1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	.	442	619	177	88	619	708	885	531	265	619	265	5218
0.50 - 0.99	.	.	265	885	442	354	531	442	88	.	88	88	3183
1.00 - 1.49	.	.	.	.	265	177	354	88	265	177	177	.	1503
1.50 - 1.99	.	.	.	.	.	.	.	.	88	.	.	.	88
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	442	884	1062	795	1150	1593	1415	972	442	884	353	

December 1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	.	161	161	323	242	484	565	1210	484	.	81	81	3792
0.50 - 0.99	.	81	1290	484	887	81	.	.	81	323	403	.	3630
1.00 - 1.49	.	.	.	.	242	161	161	161	323	645	645	.	2338
1.50 - 1.99	.	.	.	.	.	.	.	.	.	81	161	.	242
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	0	242	1451	807	1371	726	726	1371	888	1049	1290	81	

(Sheet 4 of 4)

Table E3
Annual Joint Distribution of H_{mo} versus T_p (All Years)

Annual 1980-1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	72	176	372	488	298	318	621	676	694	298	420	77	4510
0.50 - 0.99	20	157	464	897	601	277	287	304	459	120	226	20	3832
1.00 - 1.49	.	2	48	288	321	146	103	82	172	79	134	6	1381
1.50 - 1.99	.	.	.	9	41	28	18	28	53	27	50	5	259
2.00 - 2.49	.	.	.	.	1	2	1	1	4	4	5	.	18
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	92	335	884	1682	1262	771	1030	1091	1382	528	835	108	

Table E4
Monthly Joint Distribution of H_{mo} versus T_p (All Years)

January 1980-1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	79	195	384	433	214	177	323	647	677	207	293	110	3739
0.50 - 0.99	24	177	513	1031	720	201	238	305	525	92	207	12	4045
1.00 - 1.49	.	.	92	513	506	232	195	73	226	24	128	.	1989
1.50 - 1.99	.	.	.	6	18	12	12	18	67	37	43	.	213
2.00 - 2.49	.	.	.	.	.	.	.	.	.	6	6	.	12
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	103	372	989	1983	1458	622	768	1043	1495	366	677	122	

February 1980-1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	109	141	333	365	167	186	385	423	731	109	333	6	3288
0.50 - 0.99	38	154	468	955	609	263	224	359	628	109	237	.	4044
1.00 - 1.49	.	.	45	494	609	237	115	103	276	154	205	.	2238
1.50 - 1.99	.	.	.	13	83	51	32	26	45	38	115	.	403
2.00 - 2.49	.	.	.	.	6	.	.	.	6	6	6	.	24
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	147	295	846	1827	1474	737	756	911	1686	416	896	6	

March 1980-1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	
0.00 - 0.49	122	127	295	376	260	191	399	428	556	156	411	.	3321
0.50 - 0.99	41	179	451	949	561	289	260	382	619	185	370	6	4292
1.00 - 1.49	.	6	93	359	353	145	116	98	220	139	266	.	1795
1.50 - 1.99	.	.	.	12	52	41	35	81	150	75	104	.	550
2.00 - 2.49	.	.	.	.	6	6	6	.	.	12	12	.	42
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	163	312	839	1696	1232	672	816	989	1545	567	1163	6	

(Continued)

(Sheet 1 of 4)

Table E4 (Continued)

April 1980-1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	62	166	314	468	327	407	555	573	721	370	542	25	4530
0.50 - 0.99	25	222	431	813	468	271	351	308	598	86	314	6	3893
1.00 - 1.49	.	6	43	216	246	99	99	111	240	55	136	.	1251
1.50 - 1.99	.	.	.	12	43	31	49	25	74	31	25	.	290
2.00 - 2.49	.	.	.	.	.	.	.	12	18	.	6	.	36
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	87	394	788	1509	1084	808	1054	1029	1651	542	1023	31	

May 1980-1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	89	197	364	525	310	430	788	823	817	304	531	54	5232
0.50 - 0.99	18	155	573	829	621	328	310	298	424	72	137	18	3783
1.00 - 1.49	.	.	36	161	149	36	78	95	137	36	78	.	806
1.50 - 1.99	.	.	.	18	54	24	6	18	30	12	12	.	174
2.00 - 2.49	.	.	.	.	.	.	6	.	.	.	.	.	6
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	107	352	973	1533	1134	818	1188	1234	1408	424	758	72	

June 1980-1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec)												Total
	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	
0.00 - 0.49	92	210	465	956	550	576	1126	1002	707	334	275	105	6398
0.50 - 0.99	20	144	406	812	393	223	301	275	301	46	39	20	2980
1.00 - 1.49	.	.	33	131	138	46	52	33	111	.	46	.	590
1.50 - 1.99	.	.	.	.	20	7	7	.	.	.	.	.	34
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	112	354	904	1899	1101	852	1486	1310	1119	380	360	125	

(Continued)

(Sheet 2 of 4)

Table E4 (Continued)

July 1980-1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	64	237	596	756	487	564	1550	1230	826	391	461	135	7297
0.50 - 0.99	.	128	346	609	468	231	250	160	135	64	45	38	2474
1.00 - 1.49	.	.	6	115	32	13	19	.	32	.	6	.	223
1.50 - 1.99	.	.	.	.	6	.	.	.	.	.	.	.	6
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	64	365	948	1480	993	808	1819	1390	993	455	512	173	

August 1980-1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	44	207	394	557	588	482	976	1145	964	332	469	50	6208
0.50 - 0.99	6	163	482	776	519	275	294	219	238	38	119	.	3129
1.00 - 1.49	.	.	25	138	144	63	50	13	63	31	69	.	596
1.50 - 1.99	.	.	.	.	13	19	6	.	19	13	.	.	70
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	50	370	901	1471	1264	839	1326	1377	1284	414	657	50	

September 1980-1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-Longer	Total
0.00 - 0.49	72	144	347	458	190	314	465	544	648	354	511	65	4112
0.50 - 0.99	33	177	419	727	485	393	393	380	478	229	426	13	4153
1.00 - 1.49	.	.	39	393	301	190	138	111	124	72	124	13	1505
1.50 - 1.99	.	.	.	13	39	52	13	7	13	20	46	7	210
2.00 - 2.49	.	.	.	.	.	.	.	.	.	7	13	.	20
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	105	321	805	1591	1015	949	1009	1042	1263	682	1120	98	

(Continued)

(Sheet 3 of 4)

Table E4 (Concluded)

October 1980-1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	Total
0.00 - 0.49	38	185	256	236	173	160	332	383	556	332	383	51	3085
0.50 - 0.99	6	83	422	850	626	230	377	383	767	185	294	32	4255
1.00 - 1.49	.	.	38	351	396	275	166	173	345	166	185	19	2114
1.50 - 1.99	.	.	.	13	58	51	26	58	115	51	77	45	494
2.00 - 2.49	.	.	.	.	.	6	.	.	19	13	13	.	51
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	44	268	716	1450	1253	722	901	997	1802	747	952	147	

November 1980-1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	Total
0.00 - 0.49	33	130	377	377	143	202	384	345	481	312	390	150	3324
0.50 - 0.99	13	124	527	1177	813	397	280	319	423	189	215	52	4529
1.00 - 1.49	.	7	39	280	507	254	124	78	156	150	150	26	1771
1.50 - 1.99	.	.	.	13	59	33	13	78	85	26	72	.	379
2.00 - 2.49	.	.	.	.	.	.	.	.	7	.	.	.	7
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	46	261	943	1847	1522	886	801	820	1152	677	827	228	

December 1980-1994, Gauge 641
Percent Occurrence(X100) of Height and Period

Height(m)	Period(sec) 2.0- 2.9	3.0- 3.9	4.0- 4.9	5.0- 5.9	6.0- 6.9	7.0- 7.9	8.0- 8.9	9.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- Longer	Total
0.00 - 0.49	61	170	353	371	170	152	219	584	645	383	426	183	3717
0.50 - 0.99	12	170	523	1217	913	231	170	262	359	152	298	43	4350
1.00 - 1.49	.	.	85	298	463	177	85	97	128	116	207	12	1668
1.50 - 1.99	.	.	.	6	43	12	18	24	24	18	97	6	248
2.00 - 2.49	.	.	.	.	.	12	.	.	.	.	.	.	12
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - Greater	.	.	.	.	.	.	.	.	.	.	.	.	0
Total	73	340	961	1892	1589	584	492	967	1156	669	1028	244	

(Sheet 4 of 4)

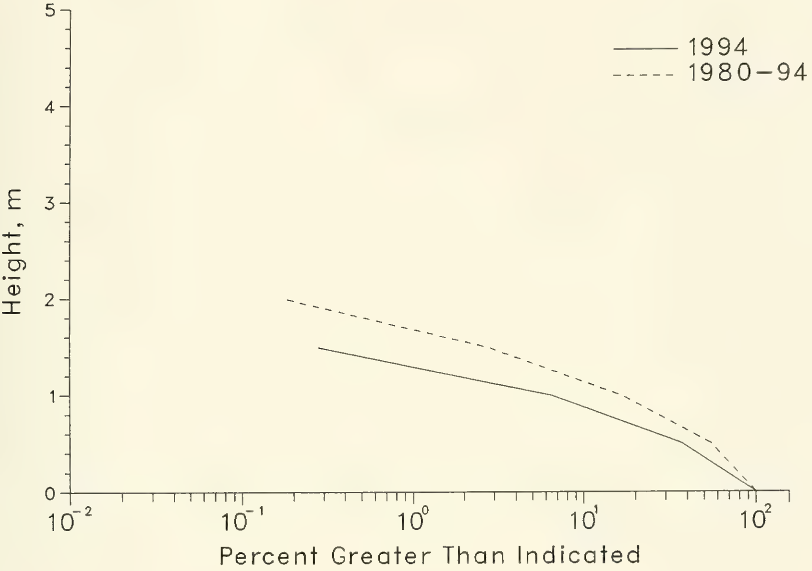

Figure E2. Annual cumulative wave height distributions for Gauge 641

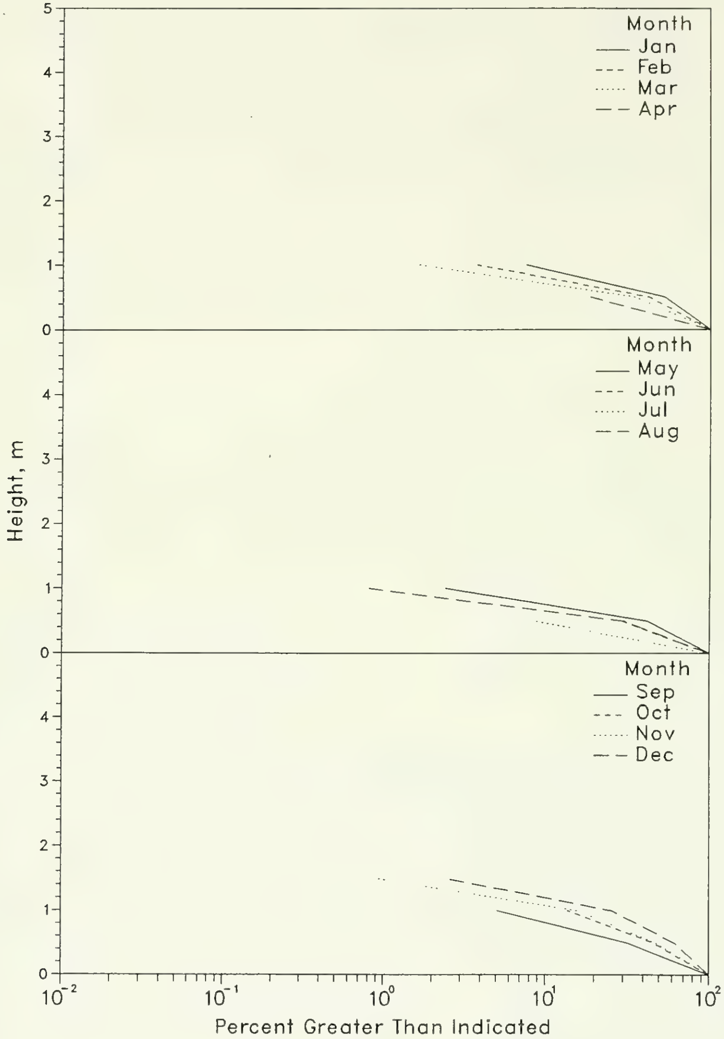

Figure E3. 1994 monthly wave height distributions for Gauge 641

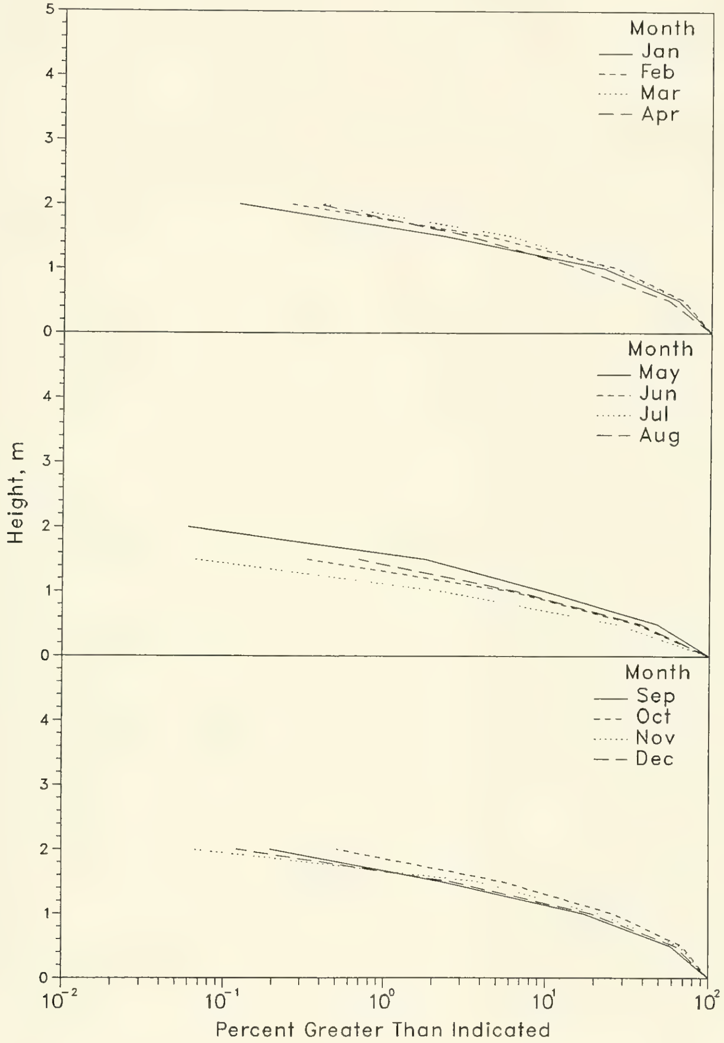

Figure E4. 1980-1994 monthly wave height distributions for Gauge 641

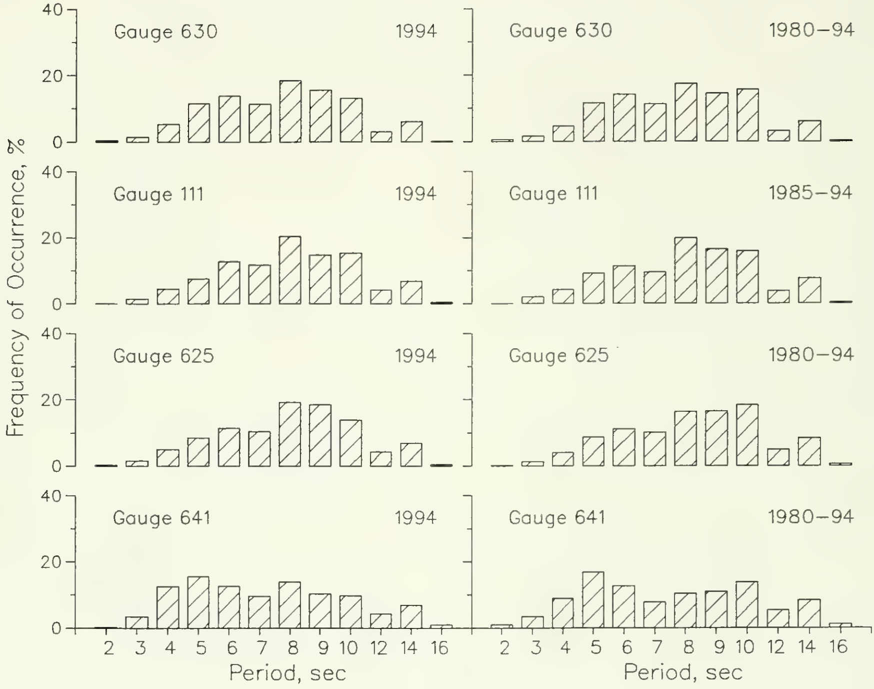

Figure E5. Annual wave period distributions for all gauges

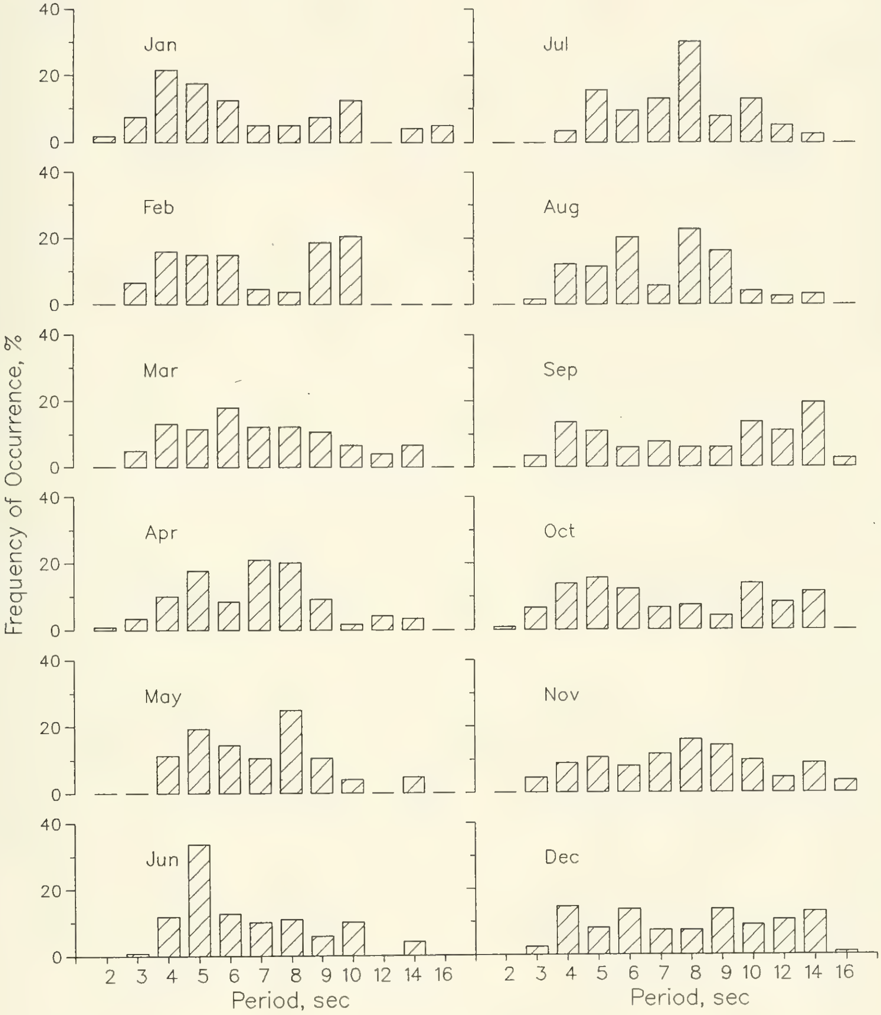

Figure E6. 1994 monthly wave period distributions for Gauge 641

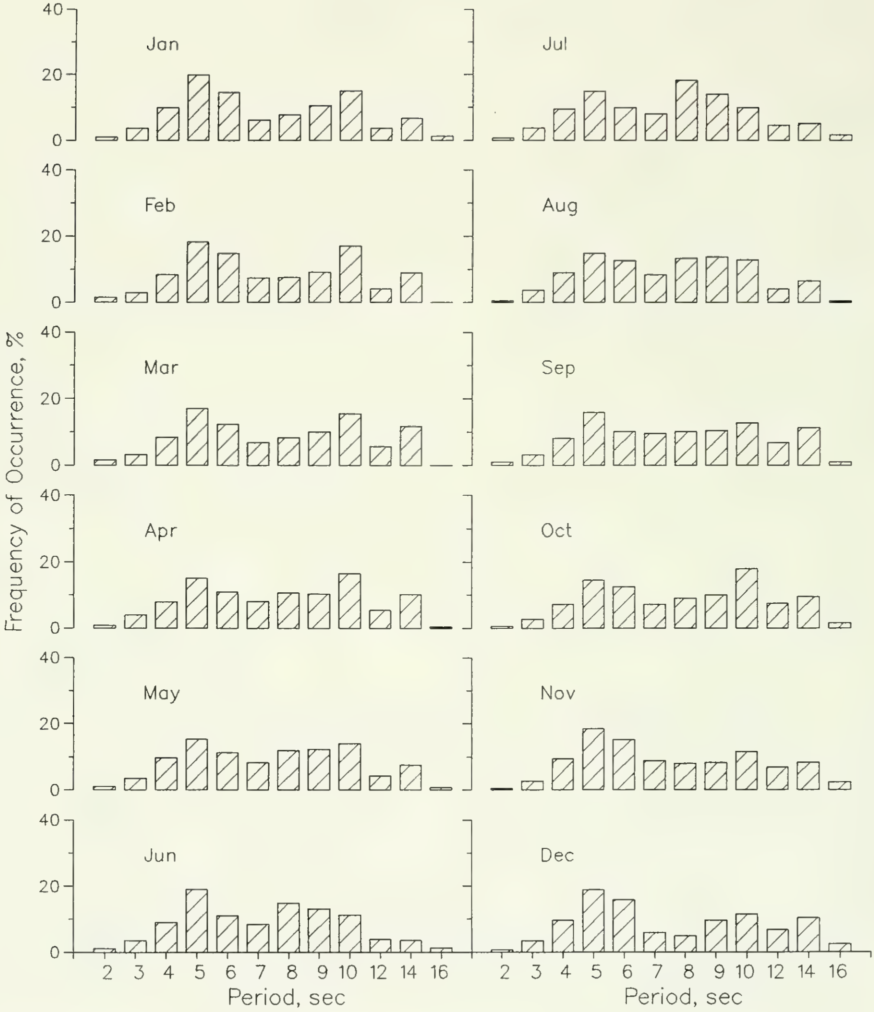

Figure E7. 1980-1994 monthly wave period distributions for Gauge 641

Table E5
1994 persistence of H_{mo} for Gauge 641

Height (m)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19+
	Consecutive Day(s) or Longer																		
0.5	51	39	32	27	17	10	6		5	4	2								1
1.0	23	10	7			3		1											
1.5	5	2																	
2.0	2																		
2.5	1																		
3.0	1																		
3.5	1																		
4.0	1																		

Table E6
1980 through 1994 persistence of H_{mo} for Gauge 641

Height (m)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19+
	Consecutive Day(s) or Longer																		
0.5	44	35	29	23	19	14	11	10	9	7		6		5		4		3	2
1.0	41	25	14	9	5	3	2		1										
1.5	14	6	2		1														
2.0	3	1																	
2.5	1																		
3.0	1																		
3.5																			
4.0																			

* 1980-1992 data from gauge 645

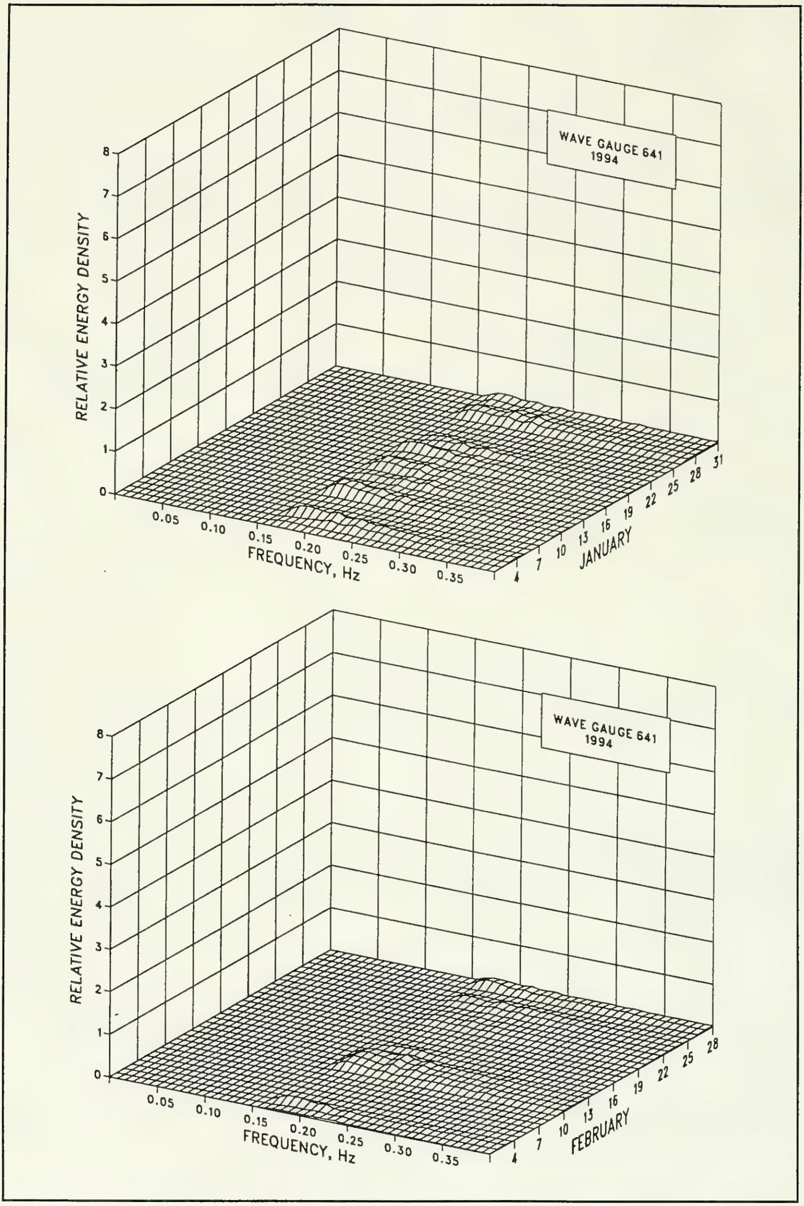

Figure E8. 1994 monthly spectra for Gauge 641 (Sheet 1 of 6)

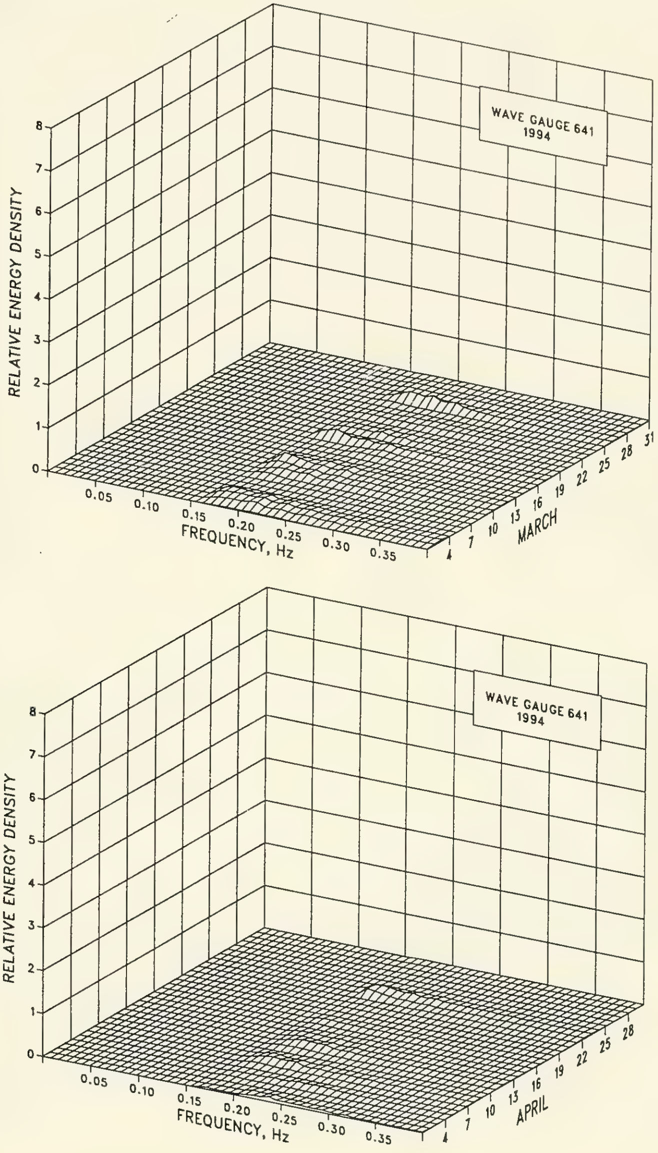

Figure E8. (Sheet 2 of 6)

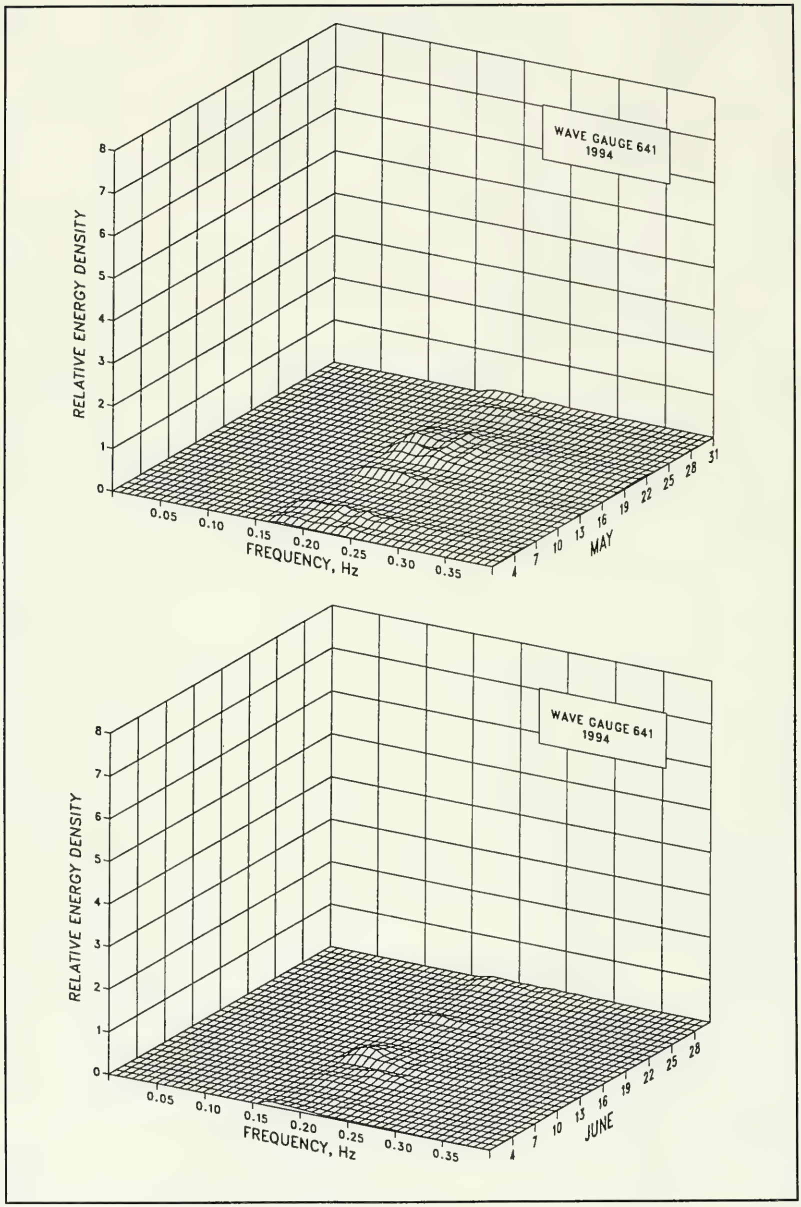

Figure E8. (Sheet 3 of 6)

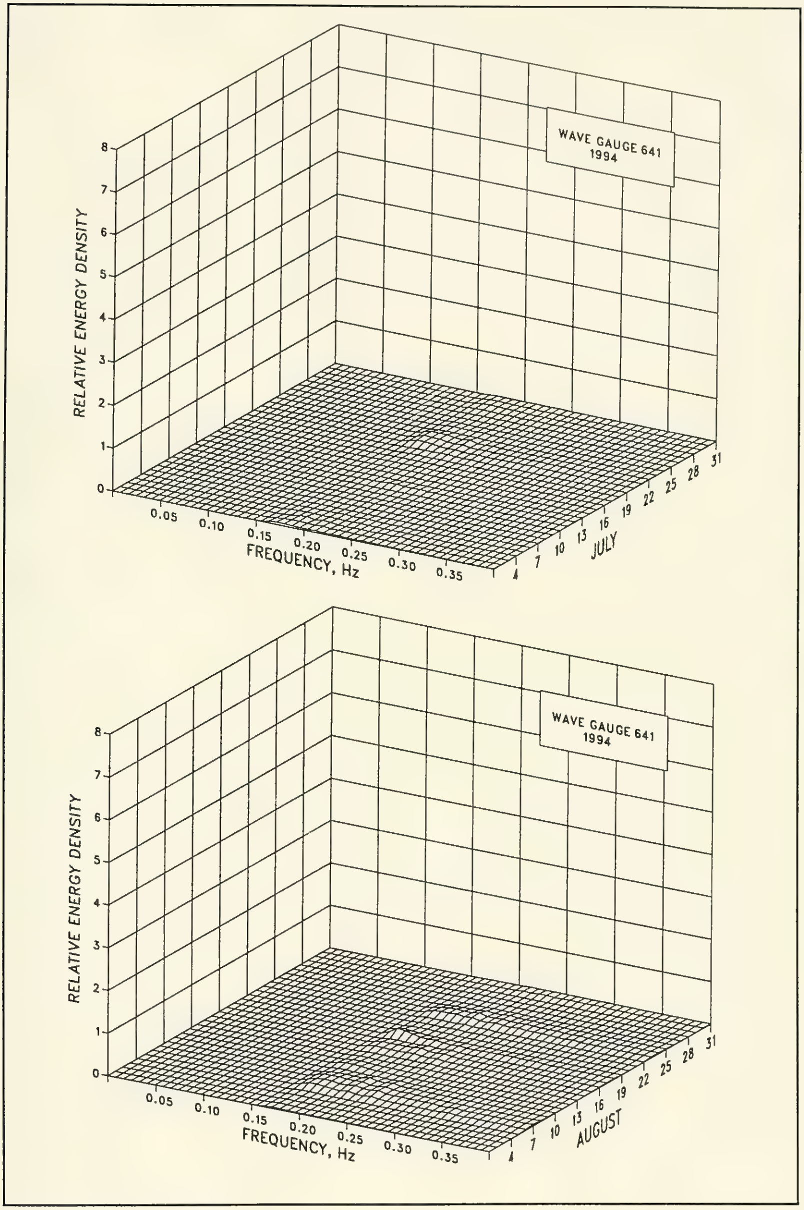

Figure E8. (Sheet 4 of 6)

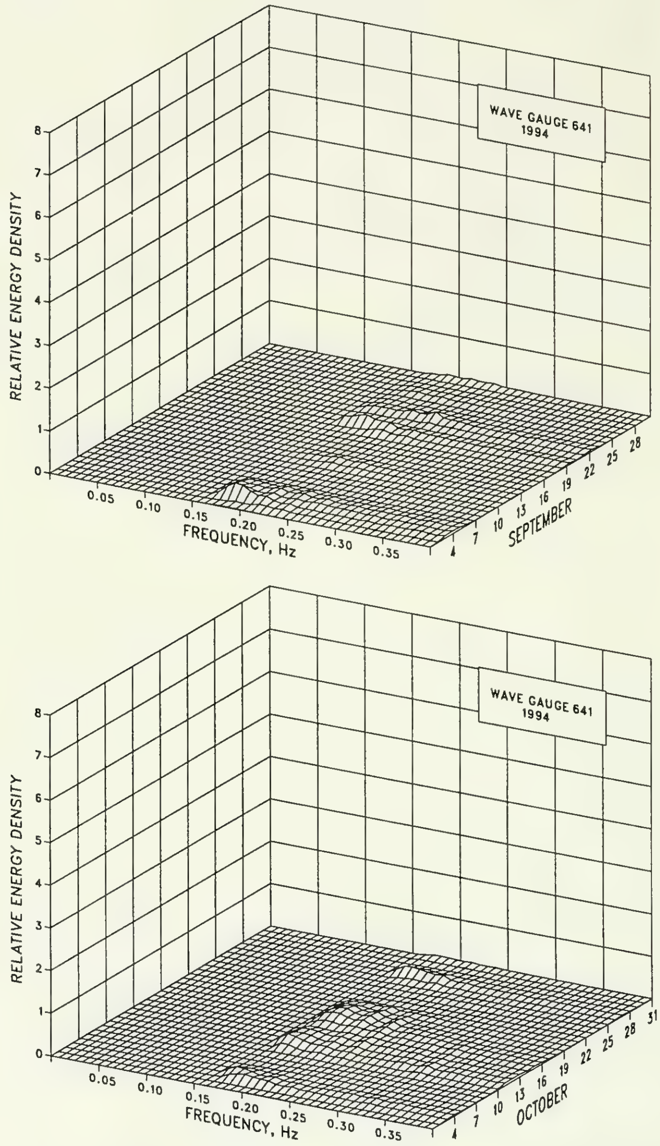

Figure E8. (Sheet 5 of 6)

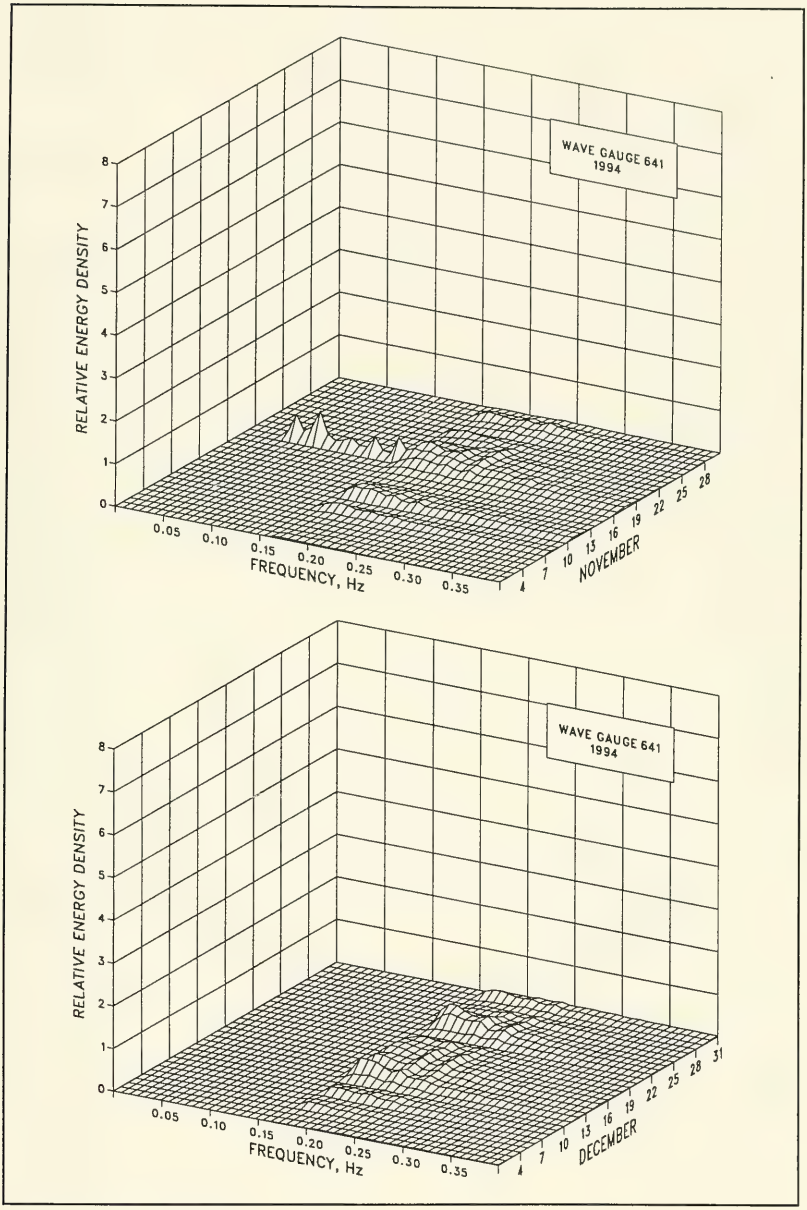

Figure E8. (Sheet 6 of 6)

Table E7
Wave statistics for Gauge 641

	1994							1980-1994						
	Height				Period			Height				Period		
Month	Mean m	Std. Dev. m	Extreme m	Date	Mean sec	Std. Dev. sec	Number Obs.	Mean m	Std. Dev. m	Extreme m	Date	Mean sec	Std. Dev. sec	Number Obs.
Jan	0.6	0.3	1.3	4	7.4	3.7	120	0.7	0.4	2.0	1980	7.9	3.2	1639
Feb	0.5	0.3	1.1	10	7.4	2.6	107	0.8	0.4	2.2	1992	8.0	3.0	1560
Mar	0.5	0.3	1.3	3	7.6	2.8	122	0.8	0.5	2.3	1980	8.3	3.3	1728
Apr	0.4	0.2	0.8	22	7.6	2.7	119	0.7	0.4	2.3	1987	8.4	3.3	1623
May	0.5	0.3	1.1	4	7.4	2.0	124	0.6	0.4	2.0	1987	8.1	3.1	1676
Jun	0.5	0.2	0.8	11	7.2	2.3	119	0.5	0.3	1.7	1990	7.8	3.0	1527
Jul	0.4	0.1	0.6	21	8.4	2.5	116	0.5	0.2	1.6	1990	8.1	3.1	1561
Aug	0.5	0.2	1.0	23	7.7	2.5	123	0.5	0.3	1.7	1982	8.1	3.0	1598
Sep	0.5	0.3	1.3	4	9.5	3.9	118	0.7	0.4	2.1	1985	8.5	3.3	1527
Oct	0.6	0.4	1.3	16	8.3	3.6	123	0.8	0.5	2.2	1982	8.7	3.3	1565
Nov	0.6	0.4	1.5	19	8.8	3.6	113	0.7	0.4	2.0	1981	8.2	3.5	1538
Dec	0.8	0.4	1.7	24	8.9	3.5	124	0.7	0.4	2.2	1989	8.3	3.6	1643
Annual	0.5	0.3	1.7	Dec	8.0	3.1	1428	0.7	0.4	2.3	Apr 1987	8.2	3.2	19185

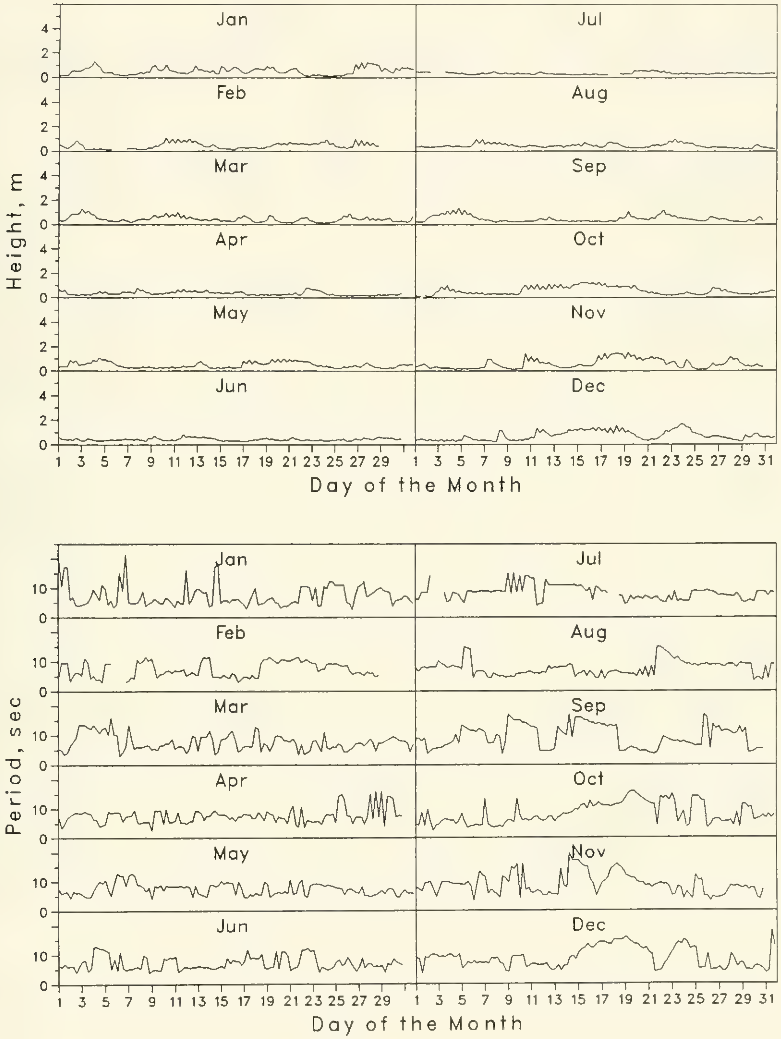

Figure E9. Time-histories of wave height and period for Gauge 641

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Michael W. Leffler, Clifford F. Baron, Brian L. Scarborough, Kent K. Hathaway, Paul R. Hodges, C. Ray Townsend

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
U.S. Army Engineer Waterways Experiment Station
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13. ABSTRACT *(Maximum 200 words)*

This report provides basic data and summaries for the measurements made during 1994 at the U.S. Army Engineer Waterways Experiment Station (WES), Coastal Engineering Research Center's (CERC's) Field Research Facility (FRF) in Duck, NC. The report includes comparisons of the present year's data with cumulative statistics from 1980 to the present.

Summarized in this report are meteorological and oceanographic data, monthly bathymetric survey results, samples of biannual aerial photography, and descriptions of 15 storms that occurred during the year. The year was highlighted by a major storm in mid-March which caused extensive flooding and damage on the western (soundside) side of the Outer Banks.

This report is the 16th in a series of annual summaries of data collected at the FRF that began with Miscellaneous Report-CERC-82-16, which summarizes data collected during 1977-1979. These reports are available from the WES Technical Report Distribution Section of the Information Technology Laboratory, Vicksburg, MS.

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